APPAREL RESEARCH NETWORK (ARN) PROGRAM

Final Technical Report

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Integrated Retail Module Rollout

Prepared for

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14. ABSTRACT

This paper presents a summary of the results of the Apparel Research Network's (ARN) installation providing for the development and implementation of the Integrated Retail Module (IRM) at Ft. Jackson, Columbia, SC. The IRM solution ties together: (1) the Virtual Item Manager-Wholesale Local (VIM-WL) web based inventory management application; (2) both a wired and wireless network outside the Ft. Jackson Army firewall; (3) electronic forms filing and management with CabinetNG; (4) RF applications with handheld terminals for warehousing data capture; and ultimately, (5) optical character recognition automated issue capture system known as the IRM Control Panel. IRM is part of the ARN solution to reduce military clothing inventories through automated systems for asset visibility at the wholesale, retail and manufacturing levels and balanced flow replenishment.

15. SUBJECT TERMS

Apparel Research Network (ARN); Integrated Retail Module (IRM), Recruit Clothing; Supply Chain Management; Virtual Item Manager/Wholesale Local; Quality Logistics Management System (QLM); Recruit Training Center; Inventory Management, and electronic forms management and filing systems (CabinetNG).

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PREFACE

This Final Technical Report covers work accomplished for the Apparel Research Network (ARN) of the Defense Logistics Agency (DLA) in conformance with Delivery Order 0008 during the period 27 March 2003 to 31 November 2004. It specifically covers the analysis, design, development, rollout, and ongoing support of the ARN Integrated Retail Module (IRM) solution and rollout to Ft. Jackson S.C.

The IRM solution ties together: (1) the Virtual Item Manager-Wholesale Local (VIM-WL) web based inventory management application; (2) both a wired and wireless network outside the Ft. Jackson Army firewall; (3) electronic forms filing and management with CabinetNG; (4) RF applications with handheld terminals for warehousing data capture; and ultimately, (5) optical character recognition automated issue capture system known as the IRM Control Panel.

IRM is part of the ARN solution to reduce military clothing inventories through automated systems for asset visibility at the wholesale, retail and manufacturing levels and balanced flow replenishment. Prior to November 2003, Ft. Jackson was using the Quality Logistics Management (QLM) Local system to track inventory balances and using the Automated Clothing Initial Issue Point System (ACIIPS) to track issues made to recruits and to generate the T23 financial obligation transactions for the DFAS systems. These two systems together were used to manage the DLA owned clothing assets located at Ft. Jackson.

The decision to move to IRM retail system and replace the ACIIPS system with the IRM Control Panel to capture issues and replace the QLM-Local system with VIM Wholesale Local was made to meet two very different criteria. First, DLA wanted an integrated solution in order to gain greater visibility of the supply items issued to recruits and to further gain visibility in VIM of the receipt and adjustment data in a near real-time manner. And second, TRADOC was required to transfer ACIIPS to a web-based application, and they determined that it was more advantageous to the Army to use the IRM system instead of undergoing new development.

Additional information on ARN Programs and related projects is available from the ARN web site at http://arn2.com/.

1.0 EXECUTIVE SUMMARY

1.1 Overview

The Apparel Research Network (ARN) has developed several innovative technological solutions that improved recruit clothing supply chain management processes within the Defense Logistics Agency (DLA). As demonstrated with this short-term project, tremendous opportunities to improve inventory accuracy rates were still available. Ft Jackson, S.C. was the Army test bed to determine if the Integrated Retail Module (IRM) could be modified and used to bring even greater efficiencies to the recruit clothing supply chain management process.

The Integrated Retail Module consists of several components/applications. The first is the Control Panel. The IRM Control Panel is the application that captures issue data and converts that data into MILSTRIP C0A transactions. In addition the Control Panel creates reports and provides a Graphical User Interface that allows users to manage recruit identification data. The Control Panel is interfaced with a COTS software tool called AutoData Scannable Office. This is the OCR application that is used to read the issue data from recruit issue documents.

The second component of IRM is the Virtual Item Manager – Wholesale Local (VIM-WL). This is the web-based inventory management system that the CIIP uses to record receipts, inventory adjustments, warehouse locations, transaction histories, and quantity on hand (QOH). VIM-WL also provides the Defense Supply Center Philadelphia with a portal providing immediate access and visibility of all transactions that have occurred at the CIIP.

IRM's third component is a radio frequency network with a Palm OS application for receiving, physical inventory and stock movement using the Palm model 1746/1846 handheld terminals (HHT). The receiving module allows the CIIP to process receipts directly from the receiving area of the warehouse. This reduces the order ship time (OST), and by posting receipts (QOH gain) before posting issues (QOH loss), miscellaneous inventory too low adjustments are prevented. The physical inventory module provides for a faster and more accurate semi-annual inventory by preventing double handling of counts and by reducing data entry mistakes by a computer clerk. The stock movement module automates the capture of tracking data when stock moves from 1 bulk location to another bulk location or to an issue location.

The fourth component of IRM, is a COTS electronic file management product called CabinetNG™. This product provides the CIIP with an automatic electronic filing of recruit issue forms. This reduces the labor involved in manual filing thousands of documents each month. An interface between the IRM Control Panel and CabinetNG (CabNG Transfer Utility) automatically files the *.tif image of each issue form in electronic folders for easy retrieval.

Three major modifications were required to the IRM Control Panel in order to meet unique Army requirements. The first modification was to move the Control Panel from a Paradox

database engine to MS Access. The second was to add a Clothing Record that could be printed for each recruit. And the third was to provide a T23 financial obligation transaction set that could be sent to the DFAS ODS system. The Marine Corps or Air Force Recruit Training Centers did not previously require these new functions.

The Discovery and Design Phase of the Army fielding of the Integrated Retail module consisted of coordination with both TRADOC and Ft. Jackson Clothing Initial Issue Point (CIIP) to:

- Determine the functionality requirements of the Control Panel;
- Gain consensus on the standardization of the issue forms process;
- Coordination for high speed internet capability;
- Coordination for an automated means of capturing the recruit identification data; and,
- Coordination of the obligation transaction data set requirements.

The intent was to encourage TRADOC to standardize all issue forms across all CIIPs in order to ultimately reduce the cost of forms modifications due to annual bag changes. Each Army site has fairly unique operating environments, and it proved impossible to get a standardized form and business practice across all Army sites.

Network Implementation Phase included the installation of the network hardware, installation of the Satellite communications technology, and expansion of the RF network. This phase also included the conversion of the site from the client/server based QLM/Local inventory management system to the web-based VIM-WL inventory management system. The implementation of the RF stock movement and physical inventory modules was also completed. And lastly the Satellite communications were replaced with a digital cable modem for high-speed Internet connectivity.

Upon completion of coordination with respective TRADOC/DFAS/Army commands and applicable issues were resolved, the Development Phase concentrated on the issue forms development and the database design modifications needed to meet functional unique Army requirements for Ft. Jackson, S.C., as well as remaining CIIP requirements identified by TRADOC. The IRM Control Panel was converted from a Paradox database engine to an Access database. The T23 obligation transaction coordination proved to be very problematic, and concurrence and sign-off on the MOA was not obtained until March 2004.
The Implementation Phase was the complete implementation of the Control Panel and CabinetNG, training of site personnel, and on-sight support for 3 weeks. The Control Panel implementation was completed in November 2003. (The fielding of the Control Panel was delayed until November with agreement from TRADOC to proceed with the fielding and hold

T23 transaction sets until the memorandum of agreement between DSCP and DFAS was signed.)

The anticipated benefits were centered on improved inventory accuracy. Ft. Jackson had averaged a 37% accuracy rate, and this short term project sought to increase accuracy rates by eliminating the manual data entry of issue transactions, electronically tracking the movement of stock from the bulk warehouse to the issue line, providing hourly updates of data in an attempt to greatly reduce inventory too low transactions. These enhancements and technology integration would ensure that recruit issues were accurately and quickly recorded, thus giving DSCP Item Managers better production requirements data. This in turn would lead to more accurate wholesale-local inventory requirement predictions and would allow for better management reports such as fill rate reports.

1.2 Project Approach

The AdvanTech, Inc. project team interviewed Ft. Jackson CIIP personnel and TRADOC personnel, demonstrated the IRM Control Panel and gathered information from the CIIP for added functionality. This information was used to design the new database.

The Discovery Phase was completed and the Implementation phase followed the sequential approach of:

1) Install the wired ARN-LAN

2) Install the wireless network

3) Install the Satellite Communications Technology

4) Install the digital cable modem

5) Install the Army donated server

6) Install the workstations, printers and scanners

7) Implement the RF applications for stock movement and physical inventory

8) Convert the QLM/Local application to the web-based VIM/Wholesale Local program

9) Upgrade the Control Panel software

10) Develop the interface for Accessions Command provided new recruit data to the IRM Control Panel

11) Develop the interface between the RECBAS recruit data and the IRM Control Panel

12) Install CabinetNG and the CabinetNG Transfer Utility

13) Develop the T23 obligation transaction based on the MOA between DSCP and DFAS

1.3 Short Term Project (STP) Objectives

Ultimately the goal of this STP was to provide a comprehensive and integrated solution to Ft. Jackson that would allow for tighter management and control over the DLA supply assets while enhancing the efficiency of issuing clothing to recruits. The specific objectives were to:

- Improve receipt-processing times and reduce inventory too low adjustments;
- Manage the movement of stock from one RTC location to another in order to ensure that all stock sent actually arrives;
- Provide a user-friendly handheld inventory process;
- Implement a faster and more efficient mechanism of capturing recruit issue transactions;
- Implement an audit trail to ensure recruit issue transactions are properly recorded/captured; and,
- Implement an electronic document management system to store and retrieve issue forms more efficiently.

1.4 Initial Site Assessment Process

- Initial site assessment to determine feasibility and cost of self contained ARN network.

- Hand Held Terminal (HHT) site evaluation by Symbol personnel to determine the radio frequency (RF) network layout and required hardware for the outlying bulk warehouses.

- Perform a Satellite survey by OptiStream personnel to determine the position, cabling and mounting requirements.

1.5 System Architecture

The ARN Local Area Network (LAN) is a self-contained network outside the Ft. Jackson firewall. There are two bulk warehouses located approximately 1 mile away from the main CIIP building. A wireless network was established in the bulk warehouses. These two warehouses are connected via point-to-point wireless network access points which then send the data signal to a computer in one bulk warehouse. All stock movement and inventory data captured with handheld terminals is sent from the bulk warehouses via the wireless network to the IRM Server. All issue data from scan forms and receipt data from the handheld terminals is captured and sent over category 5 cables through an ARN switch to the ARN server. Every hour the ARN server is polled by VIM routines for new issue and receipt data. This data is then pulled back and processed into VIM Wholesale Local through a digital cable modem.

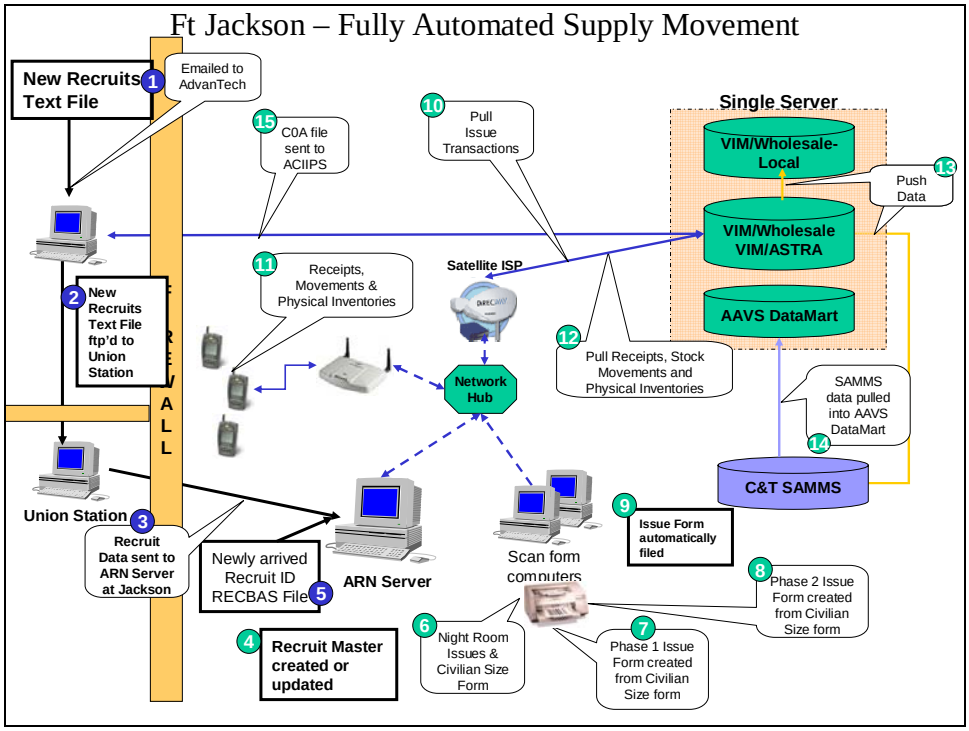


Figure 1 – Ft. Jackson Systems Architecture and Work Flow

Data Flow as shown in Figure 1:

- The newrecruits.txt file is the first data source in the issue process.
  - Accessions Command emails the Excel report that lists: a) each recruit, b) the RTC the recruit to which the recruit will ship, and c) the ship date.
  - The newrecruits.txt is reformatted and sent to the ARN server.

- The recruit's identification data is captured and the recruit master record is created.
  - Each recruit then uses the keypad device on the Night Room computer to enter his/her social security number and, the recruit's night room issue form is created.

- These forms are collected and scanned using a COTS product (AutoData Scan Form System) and the IRM Control Panel software.

- This data is pulled up to the ARN Server at AdvanTech every hour updating the VIM Wholesale Local, Suggested Order List.

Data Flow shown in Figure 1, the Phase II:

- The Phase II issue process begins with the recruits' identification data and the predicted sizes from the Phase I issue. (The initial design for predicted sizing was to construct a civilian size table and collect each recruit's civilian sizes during the night room process. This proved to be very unreliable due to the fact that few recruits actually knew what sizes they wore and the civilian fit is much looser than a military fit.)

- At Ft. Jackson, a roster of Phase II recruits is provided in advance to the CIIP.
  - This roster is used to pre-print the issue forms for each Phase II recruit. Ft. Jackson also has the option of having recruits type there Social Security Numbers into a keypad device and print forms on demand for each recruit.

- The Phase II issue form is then marked to indicate the sizes issued to the recruit, the form is scanned,

- The issue data is captured hourly and a new VIM Suggested Order List is calculated based on these issue transactions.

Data Flow for Receipts shown in Figure 1:

Ft. Jackson had been using the RF Receiving module with the HHT for over 1 year before the start of this STP. The new version of the receiving module provided the user with additional

data about the open Due-In, suffix code, location of the item and the criticality of the receipt. This made it possible for more receipts to be processed at the receiving dock without the need for a clerk to review a receiving document. The function of this module is the same as that implemented at MCRD-PI; as receipts are processed at the warehouse receiving area, data is pushed from the HHT to the ARN local server. Every hour this data is pulled up to the ARN Server at AdvanTech, updating VIM Wholesale Local, and providing data on which to create the Suggested Order List.

Figure 2 below depicts the physical layout of the network at Ft. Jackson. The wireless network is used to tie together both the HHTs and workstations in each building to a hub that is connected to the wireless access point. (The wireless access point is a conduit from the "wireless" devices to the Ethernet cable.) There was no wired connection between the warehouses and building 1895. In order to tie warehousing stock movement and physical inventory data to the IRM Network and server, a secure VPN tunnel was created between warehouse 1 and building 1895. Initially the two buildings used satellite connections to the Internet to establish the VPN tunnel. Satellite technology proved to be too slow to transmit the IRM data files. Satellite dishes were replaced with digital cable modems in warehouse 1 and building 1895.

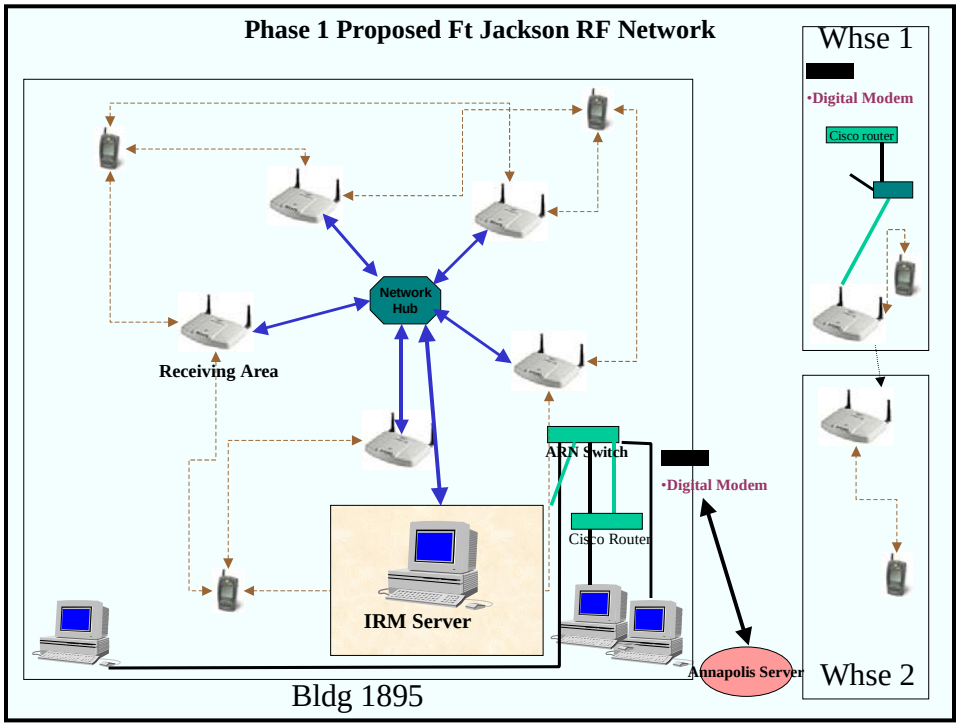


Figure 2 – Ft. Jackson ARN Local Area Network.

Note: No fiber or Ethernet cable was in place to connect the warehouse 1 and warehouse 2. AdvanTech resolved this problem by implementing a line of site RF solution whereby one access point was installed in the warehouse 1 with an antennae placed on the outside of the warehouse building. A second wireless access point was installed in warehouse 2 with an antenna placed on the outside of the building. The signal from the warehouse "hops" from the warehouse 1 antenna to the warehouse 2 antenna and the transaction is then transmitted across the secure VPN tunnel to the IRM Server.

1.6 Implementation

The first event in the implementation process was the performance of site surveys for the: a) layout of the IRM network, b) Satellite communications and c) the RF network in the bulk warehouses. Upon completion of the surveys a plan and timeline was developed for the infrastructure/hardware setup. After the network and communications hardware was in place, QLM™ was removed and VIMWL was setup as the inventory management system for Ft. Jackson CIIP.

Requirements were gathered for the changes to the IRM Control Panel that would replace ACIIPS as the system to capture issue data, exchange data and return data. It was during the requirements gathering phase that it became apparent that the Satellite communications technology could not efficiently support the transfer of the receiving data files. Ft. Jackson had been using a prototype of the HHT Receiving program since May 2002. The production HHT Receiving program as well as the HHT Stock Movement and HHT Physical Inventory program was implemented during this Short Term Project (STP). The network was completed in October 2003 with final router modifications and security enhancements.

The modifications needed to incorporate the Clothing Record were made while efforts to get detailed T23 obligation transaction requirements were made. T23 data was held in a table until the transaction sets were reviewed and approved and the Memorandum of Agreement with DFAS was signed. The Control Panel was fielded in November 2003 without the T23 function until the MOA was signed in April 2004. The T23 functions were then "turned-on" in May 2004 for completion of the project.

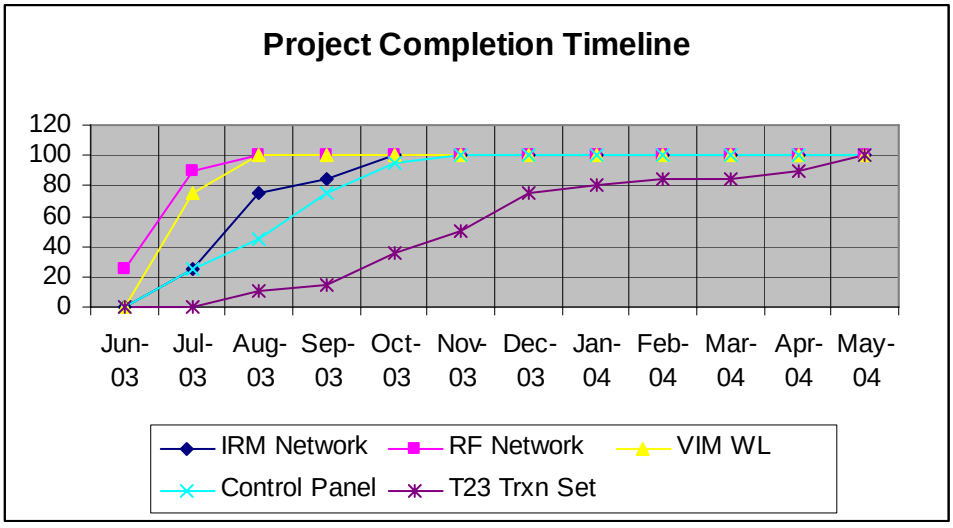


Figure 3 – Ft. Jackson IRM Project Completion Timeline

1.7 Summary

As with any fielding of a new or modified system in a new operating environment difficulties were encountered. The following items highlight the key lessons learned that needed to be considered for future rollout efforts of IRM:

- Satellite communications should only be used if DSL or digital cable is not available;
- Modification of site's procedures in order to best utilize the scan forms;
- Cut over to the IRM Control Panel should be scheduled during a relatively light recruit issue schedule; and,
- Implementation of the IRM Control Panel should be scheduled for at least 2 weeks.

In conclusion, the Integrated Retail Module system provided Ft. Jackson CIIP a self-contained network infrastructure independent of the Ft. Jackson backbone, which updates inventory data hourly minutes as opposed to 1 – 3 days (as with the old QLM/Local system). This provides the Ft. Jackson CIIP personnel and DSCP a more accurate picture of the inventory stock position throughout the day.

The Integrated Retail Module also provides DSCP with the ability to monitor inventory adjustments, receipt processing, zero balance rates, and excess stock thus providing a more accurate picture of the "Total Asset Visibility" of stock at Ft. Jackson. With that information, the DSCP Item Managers have the data to more accurately predict the supply requirements and contracting lead-time necessary to support the recruit clothing mission of Ft. Jackson CIIP.

2.0 IRM Control Panel

The IRM Control Panel was modified significantly in order to support Ft. Jackson's recruit clothing mission. The IRM Control Panel was rewritten with an Access database engine as opposed to a Paradox database as with the previous Marine Corps version of the Control Panel. Additionally the Army had requirements to produce a clothing Record that reflects any changes of exchange of sizes. This meant adding not only a clothing Record report but also meant significant database design changes in order to track exchanges for specific sizes by recruit. And lastly the most radical changes were associated with the creation and sending of the T23/obligation data for the Army. Unlike the Marine Corps the Army has accounts for each State's National Guard component that require reporting by recruit's social security number and NSN(s) issued.

The IRM Control Panel application is a tool that is used to capture detailed issue data for Defense Supply Center, Philadelphia. The Control Panel has been designed to track the social security number, platoon number, stock number, quantity issued and date issued for each recruit. This data is then used to: (a) create a C0A issue transactions for each NSN issued to a particular recruit, (b) create a clothing record, (c) capture and display due member data, and (d) create the appropriate financial obligation (T23) records.

2.1 Overview of System Architecture

The IRM Control Panel incorporates relational data base design functionality. There are 3 Access databases that are linked and contain the data used to drive the functions of the IRM Control Panel. Two of these databases are located on the IRM server and 1 is located on each of the workstations.

- Server: scannednsn.mdb
- Server: worktables.mdb
- Workstations: recruits.mdb

The scannednsns.mdb contains the tables and queries that relate directly to recruit identification data and recruit issues. The worktables.mdb contains the tables and queries that relate to the site identification data, and MILSTRIP and obligation transaction data. The recruits.mdb contains issue form data tables and a translation table for the CabinetNG interface.

There are 2 Access databases used with the COTS product AutoData Scannable Office. These databases (images.mdb and associates.mdb) are located on each workstation and are used to translate the scanned form to the issue form tables in the recruits.mdb.

For a complete view of the Control Panel Architecture, see Appendix F.

Server 192.168.X.244	Scan1 192.168.X.11	Scan2 192.168.X.12	PS1 192.168.X.5	PS2 192.168.X.6
C:\Program Files\ Recruit Smart Card Reader\Recruits.mdb	C:\Program Files\ Recruit Smart Card Reader\Recruits.mdb	C:\Program Files\ Recruit Smart Card Reader\Recruits.mdb	C:\Program Files\ Recruit Smart Card Reader\Recruits.mdb	C:\Program Files\ Recruit Smart Card Reader\Recruits.mdb
C:\Program Files\Control Panel	Control Panel w/steps 1, 2, 3	Control Panel w/step 1	Control Panel no steps	Control Panel no steps
N:\CabNG LAN Share CabNG	Map to N:\CabNG CabNG	Map to N:\CabNG CabNG	Map to N:\CabNG CabNG	Map to N:\CabNG CabNG
	CabNG API	CabNG API		
D:\Program Files\AutoData	D:\Program Files\AutoData w Key	D:\Program Files\AutoData w Key	D:\Program Files\AutoData	D:\Program Files\AutoData
MS Office	MS Office	MS Office	MS Office	MS Office
	HS Scanner	HS Scanner	Printer	Printer
			Keypad	Keypad
	Scanner Emulation	Scanner Emulation		
Share scannednsns D:\scannednsns Scannednsns.mdb	Mapped to scannednsns	Mapped to scannednsns	Mapped to scannednsns	Mapped To scannednsns
Share worktables D:\worktables Worktables.mdb	Mapped to Worktables	Mapped to worktables	Mapped to worktables	Mapped to worktables
D:\qlm_sitename\importdata D:\qlm_sitename\importdata2 D:\qlm_sitename\importdata3 D:\qlm_sitename\vimwltrans Share qlm_sitename	Map to Q:\importdata, Q:\importdata2 Q:\importdata3 Q:\vimwltrans	Map to Q:\importdata, Q:\importdata2 Q:\importdata3 Q:\vimwltrans	Map to Q:\importdata, Q:\importdata2 Q:\importdata3 Q:\vimwltrans	Map to Q:\importdata, Q:\importdata2 Q:\importdata3 Q:\vimwltrans
Qlmserver2				
Qlmserv.ini				
RF Tables				
Intersolv ODB				
Palm Desktop				
Paradox				
D:\ImageFileName	D:\ImageFileName	D:\ImageFileName	D:\ImageFileName	D:\ImageFileName
D:\QLM\formdata	D:\QLM\formdata	D:\QLM\formdata	D:\QLM\formdata	D:\QLM\formdata
Adobe Acrobat Reader	Adobe Acrobat Reader	Adobe Acrobat Reader	Adobe Acrobat Reader	Adobe Acrobat Reader
WinZip	WinZip	WinZip	WinZip	WinZip
UltraVNC	UltraVNC	UltraVNC	UltraVNC	UltraVNC
eTrust	eTrust	eTrust	eTrust	eTrust
Open Secure Server				

Figure 4 – IRM Control Panel Database Setup

2.1.1 Recruit Master

The building of the Recruit Master record is the pivotal first step needed in order to print issue forms and ultimately capture the data necessary to create the C0A transactions. An interface

with a Smart Card (ID Card) similar to the solution developed for the Marine Corps was not feasible because Army recruits are not issued Smart Cards as quickly as the Marine Corps recruits. An alternative solution to automatically build recruit master records was required.

Two interfaces had to be developed that would capture and build the initial recruit master record and then update existing recruit master records with the correct cost center data. The only initial file that could be obtained was the Army's "nametag" report. This is a spreadsheet that is created which indicates a recruit's name, SSN, component, sex, the training center to which they are assigned, and the estimated arrival date. Accessions Command sends this data to AdvanTech daily. (See Appendix C for a file layout.) AdvanTech breaks out the names by RTC and sends the data to the applicable RTC server. When the user opens the Control Panel, a program checks to see if a new file is available and imports the relevant data necessary to build the initial recruit master record.

Once the recruit arrives at the RTC and in-processes into the Receiving Battalion, he/she is assigned to a Receiving BN company and his/her cost center data and rank are captured. This data is loaded into a database called RECBAS. A daily extract of RECBAS is provided (via floppy disk) to the CIIP which is then loaded to the IRM server. Again, when the Control Panel is opened a program checks to see if a new RECBAS file is available and all relevant data is imported. Figure 5 below outlines the processes used to create the Recruit Master record for each recruit.

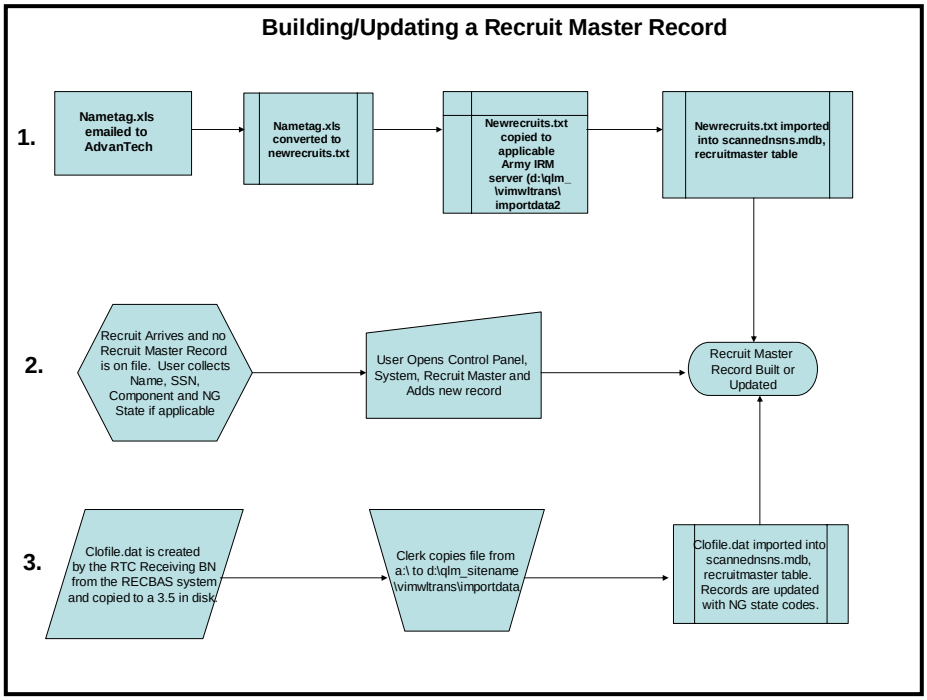


Figure 5 – Recruit Master Table

The following describes the sequence of activities completed in the Recruit Master Table Creation process:

1. Army emails the nametag.xls report to AdvanTech.

2. AdvanTech converts the nametag.xls to the newrecruits.txt file and sends to the applicable Army IRM server (d:\qlm_<sitename>\vimwltrans\importdata2.

3. Upon each opening of the Control Panel, a program queries the Importdata2 folder for new files. If a file is detected the newrecruits.txt is imported into scannednsn.mdb, recruit master.

4. Users can also build records by opening the Control Panel, System, Recruit Master and entering the required data.

2.1.2 Issue Forms

Ft. Jackson has three basic issue phases. The Night Room issue phase is the issue that a recruit receives the first night that he/she arrives at the Receiving Battalion. Phase 1 is the issue phase where the recruit receives his/her training uniform equipment and occurs typically within 24 hours of arrival to the Receiving Battalion. Phase 2 is the issue phase where the recruit receives his/her dress uniform and occurs typically 6 weeks after the Phase 1 issue.

Night Room

The first process discussed here is the Night Room form process. The Night Room issue is the very first issue that is made to new recruits on the night of their arrival. Recruits are sent to the CIIP after initial processing into the Receiving Battalion. Recruits report to the CIIP and form a line in front of an IRM Control Panel workstation. Each recruit is then instructed to enter his/her SSN into the remote keypad.

If the SSN is recognized a Night Room issue form is printed with the recruit's identification data and a unique issue form number (Requisition Number). The recruit enters the issue area with his/her issue form, and the CIIP staff issues the items and marks the form with the size issued for each item. These forms are collected and provided to the IRM Control Panel clerk the next morning for scanning and processing.

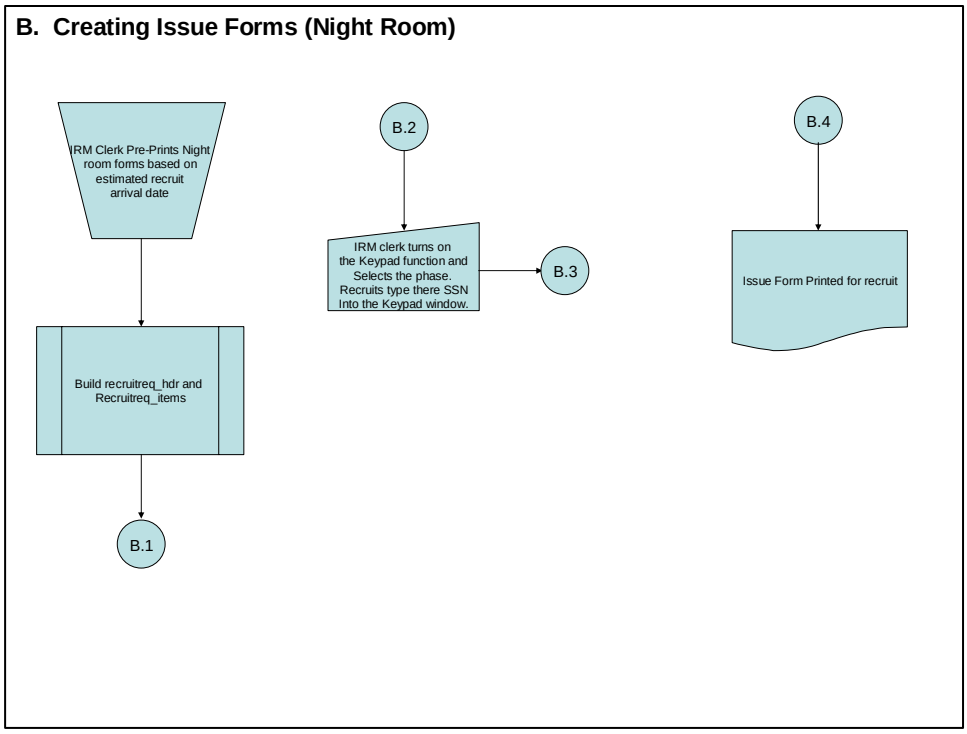


Figure 6 – Night Room Issue Form Process

The following describes the sequence of activities required to produce the Night Room Issue Form:

1. IRM clerk periodically runs a Control Panel "pre-print function that builds the Night Room issue form header record (containing the recruit's identification data and the unique Requisition Number) and item record (containing the unique Requisition Number and item data for a Night Room issue form.)

2. Recruit enters his/her SSN data into the remote keypad on the IRM workstation.

3. The issue form with the recruit's header record information and the item record data is printed.

4. The recruit's form is marked by CIIP personnel for size and quantity issued.

Phase 1 and Phase 2

The second type of issue is the Phase 1/Phase 2 issue. These are very similar issue form creation processes. In order to accurately create the National Guard MILSTRIP and T23 obligation file the first step after the Night Room forms have been printed, marked and handed

to the IRM clerk, is to run an additional interface with the Receiving Battalion's RECBAS system. This system provides a file (clofile.dat – see Appendix D for the file layout) that updates the IRM Control Panel Recruit Master record and inserts a National Guard State code. This code is required in order to create the MILSTRIP and T23 financial obligation file with the correct unit DODAAC.

An automated nightly process creates all Phase 1 and Phase 2 issue form header records and issue form item records. These are then preprinted from a roster that is provided to the CIIP clerk or the recruit types his/her SSN into a remote keypad device on an IRM workstation. The recruit proceeds through the issue line, and CIIP personnel mark the forms for the size and quantity issued.

After completing the issue, recruits report to the shake down area where they inventory all items that they have received, they sign and date their issue form, and the forms are collected and given to the IRM clerk. Forms are scanned and a Clothing Record is produced for each recruit. At the end of each day the IRM clerk runs the CabinetNG Transfer Utility and all issue forms are automatically filed in the electronic file management system for later retrieval.

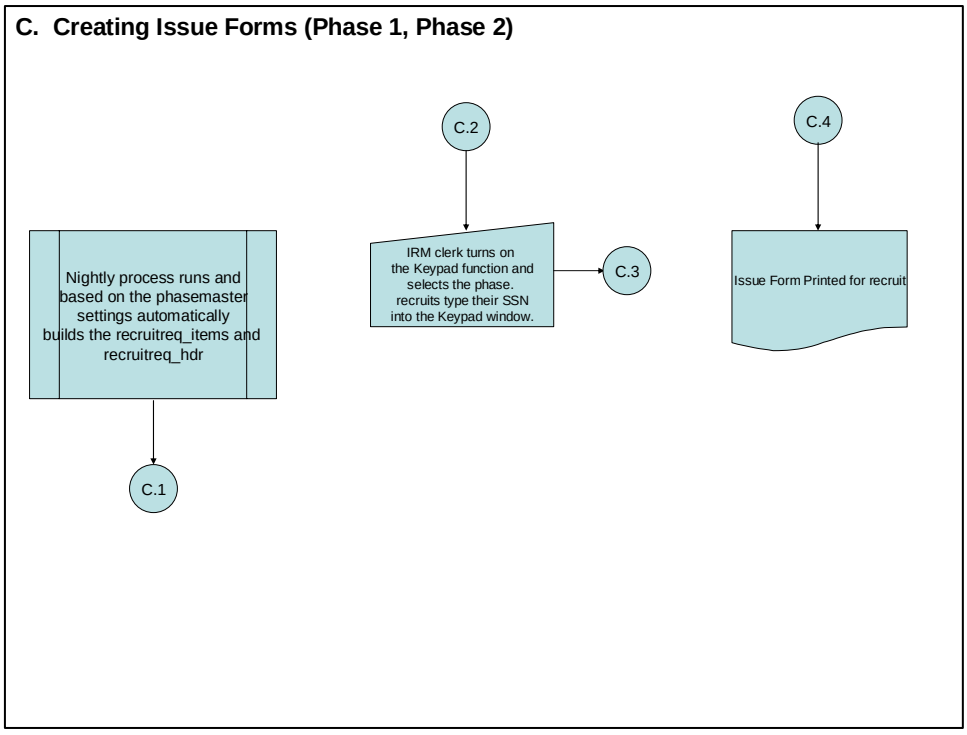


Figure 7 – Phase 1 & 2 Issue Form Process

The following describes the sequence of activities required to produce the Phase 1 and Phase 2:

1. Control Panel nightly process creates the Night Room issue form header record (containing the recruit's identification data and the unique Requisition Number) and item record (containing the unique Requisition Number and item data for a Night Room issue form.)

2. Recruit enters his/her SSN data into the remote keypad on the IRM workstation or the IRM clerk uses a platoon roster and prints the recruit's issue forms prior to their arrival at the CIIP.

3. The issue form with the recruit's header record information and the item record data is printed.

4. Recruits carry the form(s) through the issue area and CIIP personnel mark the forms for the size and quantity issued.

2.1.3 Capture Issue Data

After issue forms are marked and collected by the IRM clerk, the forms are then scanned using the COTS product AutoData Scannable Office. The IRM clerk places the forms in a high-speed forms scanner. The clerk then runs the AutoData Form Reader function. This creates an image of the form and saves the image, the recruits.mdb form data tables are updated with the sizes marked, quantity issued, and location and name of the form image.

The IRM clerk then opens the Control Panel and processes the issue. During this processing:

- The recruit requisition header record is updated with the correct cost center,
- The recruit's requisition item detail record is updated with the final NSN issued and date
- The issue form table is updated with the processed flag set to yes
- The issue transaction record is built
- The due member table is built for any items not fully issued
- The clothing record is created from the issue transaction table
- The C0A records are created
- The T23 financial obligation data is created.
- The C0A data is then written to a transaction folder (VIMWLTRANS) on the server
- An hourly a job pulls any C0A transaction files up to the ARN Server at AdvanTech and processes through ASTRA to SAMMS/BSM, and
- A 9 p.m. job creates a T23 transaction set from the T23 data residing in the T23 obligation table and ftp's the file to the DFAS ODS system. (See Appendix F for the DSCP/DFAS MOA.)

2.2 Scope of Project

The scope of the project involved significant effort in both redesigning existing functionality and the design of new functions to meet Army specific requirements, which included the following: 1) Design and development of an Access database; 2) Design and development of Army scan forms; 3) Development of a clothing record; 4) Additional functions were developed to accommodate the exchange, return, special issue and subsequent update of the recruit clothing record; and, 5) Development of the T23 financial obligation transaction. These activities are described in the following table.

Function Priority Group	Control Panel Modification/Work	Remarks
First	Database Redesign	Replacing Paradox with MS Access
First	Interface Design	Newrecruits.txt and RECBAS
Second	Forms Design for Access Tables and table standardization	Made for easier maintenance of forms by making the forms table driven instead of hard coded
Second	Exchange/Return Program Designed and Developed	New Function
Second	Creation of D8 and D9 transaction sets based on Exchanges	New Function
Second	Special Issue Program Designed and Developed	New Function
Second	Clothing Record Designed and Developed	New Function
Third	Open Requisitions Report Designed and Developed	New Function
Third	Error Reporting – User level	New Function display and log errors noted during step 1.
Third	Reprint of Issue Form Function Designed and Developed	New Function
Fourth	National Guard Financial Report	New Report
Fourth	Due Member Report	Added October 2004
Fourth	T23 Obligation Transaction Designed and Developed	New Function

Table 1 – IRM Control Panel Modification and Implementation

3.0 VIM Wholesale Local

VIM/Wholesale Local (VIM/WL) is the web-based inventory management system that replaces the QLM Local client server inventory management system. Very few modifications were required for VIM/WL. Additional reports were provided and current reports were converted to the Crystal Report Writer interface.

The Quality Logistics Management (QLM™) QLM/Local system provided a single workstation at Ft. Jackson. All data from QLM/Local was transmitted during a nightly batch process to the wholesale system SAMMS/BSM. The total batch time from creation of transaction until the transaction appeared in VIM took between 24 and 72 hours. Now with the VIM/WL, issues and HHT receipts display hourly and adjustments, location changes, and receipts processed in VIM/WL display immediately.

Table 1 summarizes functionality that was added to VIM/WL during this STP.

Function Priority Group	VIM/WL	Remarks
First	Daily $ Report	New Function added to the View Issues Page
First	Crystal Reports Expected Zero Balance	Modification to Existing VIMWL Report
First	Crystal Reports Overdue Requisitions	Modification to Existing VIMWL Report
Second	Crystal Reports Print Bin Labels	Modification to Existing VIMWL Report
Second	Crystal Reports for View Issues	Modification to Existing VIMWL Report
Second	Crystal Reports Stock Status	Modification to Existing VIMWL Report
Second	Crystal Reports A2A Redistribution	Modification to Existing VIMWL Report
Third	Crystal Reports Print Inventory Adjustments	Modification to Existing VIMWL Report
Third	Crystal Reports Receiving Report	Modification to Existing VIMWL Report
Third	Crystal Reports View Suggested Order List	Modification to Existing VIMWL Report
Third	Crystal Reports View Credits	Modification to Existing VIMWL Report
Third	Crystal Reports View Open DSCP	Modification to Existing VIMWL

Function Priority Group	VIM/WL	Remarks
	Receipts	Report

Table 2 –VIM/WL Upgrades

3.1 Overview of System Architecture

VIM/WL operates on an SQL database and uses Active Server Page (ASP) for the user interface. The ARN server at the AdvanTech corporate office has both scheduled tasks and data transformation services (DTS) programmed to query the Ft. Jackson IRM Server hourly via a secure VPN tunnel/connection.

Two updates occur with the MILSTRIP transaction files for issues (C0A), receipts (D6K or D6Z), and adjustments (D8A or D8B). VIM's Wholesale Due-In table is updated with new data as it is received. This provides both the site and DSCP Item Managers with very near-real-time data. This, in turn, updates Ft. Jackson's Suggested Order List (SOL), which is updated with each update to the Wholesale Due In table. The second major update is to the SAMMS & BSM system. As the MILSTRIP transactions are pulled from Ft. Jackson, the transactions are processed through ASTRA and transferred by FTP to the DSCP systems.

Transactions produced by the HHTs are text files that are picked up hourly in much the same way as mentioned in the above paragraph. To update the HHT with the latest Due-In data, updates to several Paradox tables are made on the ARN Server at AdvanTech. These tables are then pushed to the IRM Ft. Jackson Server. When the HHT's are turned on and a function is selected (receiving, stock movement or physical inventory), the "local" Paradox tables are queried and uploaded/transferred to the HHT making the data request.

3.2 VIM/WL Objectives

The underlying principle of the Integrated Retail Module is to provide users with a real-time system and in so doing provide up to the minute inventory data to item managers. This inventory data in turn provides item managers with the information upon which they can make decisions affecting contracting requirements, and redistribution priorities to the retail organizations.

The objectives of the VIM/WL portion of this Short Term Project (STP) and project proposal leading to this FTR included:

- Converting from the Paradox client/server QLM/Local system to an on-line real-time or near real-time application accessible via the ARN Virtual Item Manager (VIM) application suite;

- Eliminating the nightly batch processing from QLM/Local and use of near real-time data transfer services and scheduled tasks to capture and process data; and,

- Improve the inventory accuracy rate.

4.0 RF Network and Applications

The RF Network and the HHT applications collect and transmit data in a near real-time speed for update into VIMWL. The RF Network expands and extends the "wired" portion of the network relatively inexpensively and allows for the capture of receiving data and inventory data at the point that the work is actually completed or at the point that location and inventory data is needed. This prevents any delays that can occur when a stack of paperwork is given to a clerk for data entry into a workstation.

The enhanced data visibility and access to programs with the RF Network was necessary in order to give the users a means of tracking stock as it moved from a bulk location to other storage or issue location. And the HHTs and RF Network provided faster access to data and more accurate physical inventory processes. Ft. Jackson already had the HHT receiving program. The other two applications (Stock Movement and Physical Inventory) were added during this STP.

Warehouse personnel can use a HHT to process receipts and have all of the historical data at their fingertips if discrepancy research is required. The Stock Movement application provides for a tracking mechanism of stock moved from one building to another or from bulk locations to issue locations and replaces the manual pull sheets used to capture and view what stock (and quantity) moved from bulk to the issue area. The physical inventory program allows for the capture of National Stock Number (NSN) and quantity counts by location with the HHT and automatic upload of the data to the server without the need for a clerk to type in the results from a count sheet.

Ft. Jackson processes 90% of all receipts using the HHT receiving module. However, Ft. Jackson has chosen not to use the stock movement program at the current time and does not use the HHTs for the physical inventory. It is believed that once personnel become more familiar with the HHTs, all functions will be used.

4.1 Overview of System Architecture

The HHT solution is a radio frequency networked solution that requires a server component, a handheld component and database tables used to store data for transmissions from the ARN server at the AdvanTech, Inc. corporate office. The server component is a Visual Basic program that acts as a conduit between the database tables and the HHT program. This server component (ARN RF Server) tracks the session properties of each HHT requesting and sending data.

The HHT component is based on programs developed for the Palm™ operating system. Data is received and sent by the HHT in the form of text strings. These text strings are routed to the Ft. Jackson's IRM server, where they are picked up hourly and processed for display in VIM/WL with subsequent transmission to SAMMS/BSM. Updated due-in data and stock catalog data is populated to Paradox tables on the ARN server at the AdvanTech corporate office. Updated tables are sent to the IRM server hourly. These updated tables contain the data that is sent in the form of text strings to the HHT.

The IRM HHT solution is designed as an uninterrupted data collection solution. This means that should the VIM server be down, the user can continue to process receipts and send data. Additionally the user can continue to work in a disconnected mode. This means that even if the user is unable to connect to the wireless network, the HHT will continue to process data and will attempt to send data. Once it is in range of a network access point, all data will be transmitted.

There are also four levels of security implemented across the wireless or RF network:

- AdvanTech first implemented machine address code (MAC) filtering for security. This is a setting established on the wireless network access points (WAP). If a device tries to access the wireless network, the access point checks the devices MAC address and refuses unregistered addresses.

- The second level of security is through the use of ESSID. This is a setting on the WAP that must be matched exactly by each device trying to gain access to the wireless network. AdvanTech established the ESSID code on the WAPs, the HHTs, and the wireless PCMCIA cards.

- The third level of security is through WEP 128 bit encryption techniques. Again a unique key is programmed into the WAPs and each device on the wireless network.

- And lastly there is password control into the IRM HHT applications.

4.2 Scope of the Project

A complete survey of the main issue building had been conducted in 2002 when the RF Receiving solution was implemented. The survey of the outlying warehouses was completed as a part of this STP. Six wireless network access points were installed and five HHTs were provided to the site. This configuration (as shown in **Figure 8 – Ft. Jackson Equipment Layout** below) provided 100% wireless coverage in the Clothing Branch.

The receiving program was the only RF application developed before the start of this project. Enhancements to this module were required in order to provide the receiving clerk with the data needed to process partial receipts and/or receipts for supplemental shipments without suffix codes.

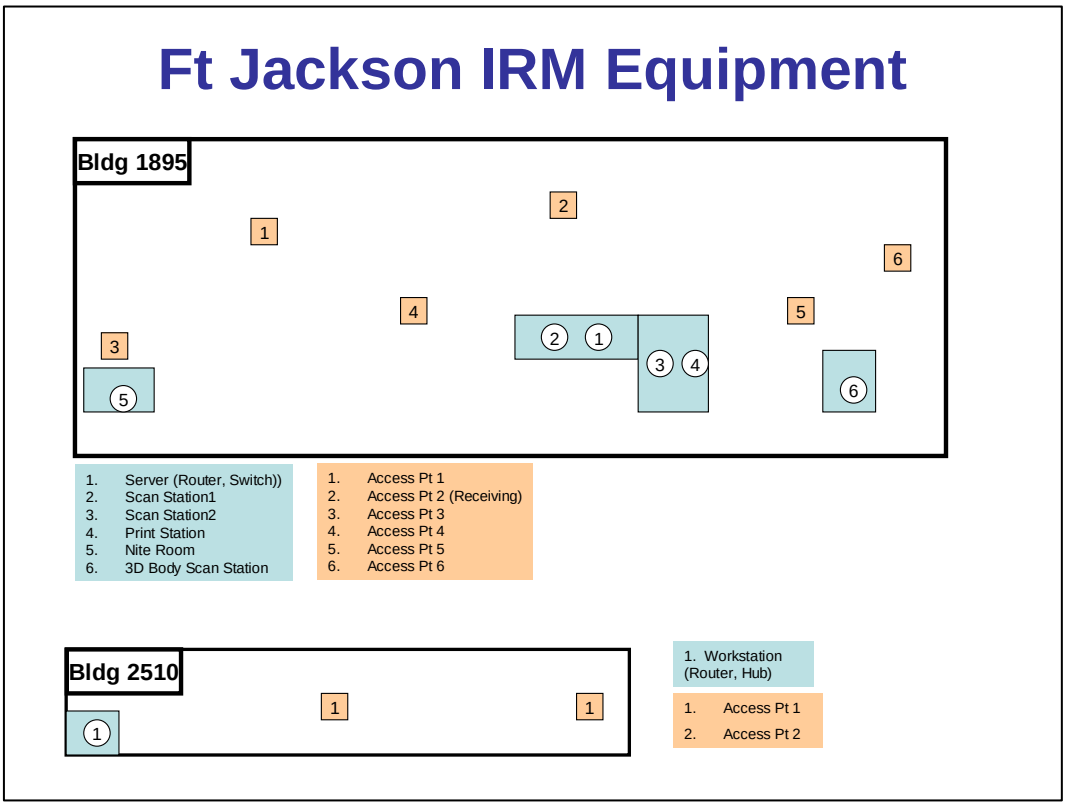


Figure 8 – Ft. Jackson Equipment Layout

The receiving program uses the recduehht.db. The recduehht.db provides:

- Document number;
- NSN;

- Original quantity of order;
- Remaining quantity due-in;
- Average daily usage;
- Quantity on hand; and,
- Last suffix code used.

The complete due-in file is downloaded to the HHT. Once the receiving clerk scans the document number, all of the data associated with that document number is displayed on the HHT receiving screens.

The stock movement program uses the following Paradox tables:

- costcen.db;
- stockmoves.db;
- mastcat.db; and,
- stockcat.db.

The costcen.db table is used to identify the warehouse or issue area where stock is moved from or to. The stockmoves.db is a new table that tracks the area sending stock and the area receiving stock, the NSN sent and the quantity sent and received. The mastcat.db is used to capture the NSN and the item description. The stockcat.db is used to identify the bin location, and bulk locations.

The physical inventory module was designed to provide the user with greater flexibility to count multiple packaging types and quantities and to provide a greater accuracy in the inventory count by directing the user to each location in the warehouse sequentially. The program also allows Ft. Jackson CIIP personnel the functionality of picking-up NSNs not on the HHT count file. All of this functionality is intended to insure more accurate semi-annual inventories.

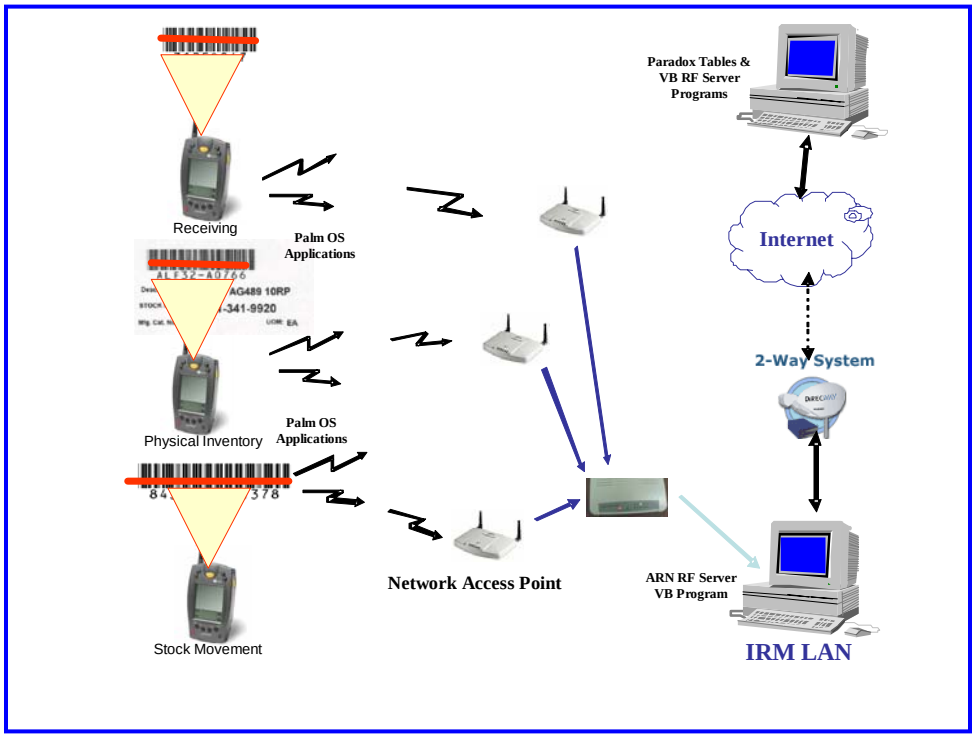


Figure 9 – ARN Receipt, Physical Inventory & Stock Movement Modules

4.3 RF/HHT Objectives

The objectives of the RF/HHT included:

- Installation of a wireless network with 100% coverage in all issue, receiving and warehousing areas
- Provide a more efficient receiving process and allow for receipt of partial shipments, and
- Implement a stock movement and physical inventory process that eliminated the manual keying errors of the previous system and provide a more accurate inventory count.

5.0 Electronic File Management System

CabinetNG™ is the commercial off the shelf (COTS) electronic file management system. The intent of fielding an electronic file management system was to provide Ft. Jackson CIIP personnel with a product that would easily file all scan forms and make scan form retrieval an easy and efficient process.

An interface between the IRM Control Panel and CabinetNG automatically file forms after they are scanned. Forms are filed in a folder which is labeled with the first 3 digits of the recruit's social security number, and then the form itself is filed by the last four digits of the recruit's social security number and last name. This provides for the easiest possible retrieval of a specific recruit's issue data. At Ft. Jackson, the CabinetNG is accessed entirely by the Control Panel operating staff.

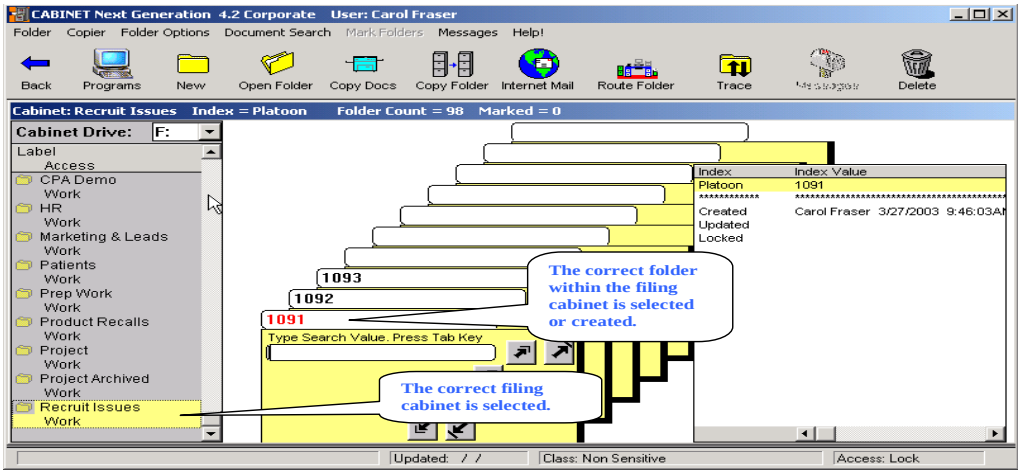


Figure 10 – Electronic Filing of Recruit Issue Forms

5.1 Architecture

The electronic file management system is both a commercial off the shelf (COTS) product as well as a custom interface program developed. The electronic file management system, CabinetNG™ and the custom interface were developed by ePaperless. The database for CabinetNG is a proprietary database structure. A five-seat license was purchased with one copy on each of the two scan stations, two print stations and one additional copy for ay additional computer added to the IRM network. As illustrated in the following, all scanned forms are

saved to a designated drive on the server, and all five (5) workstations point to that shared drive to access the "filed" images (see Figure 11).

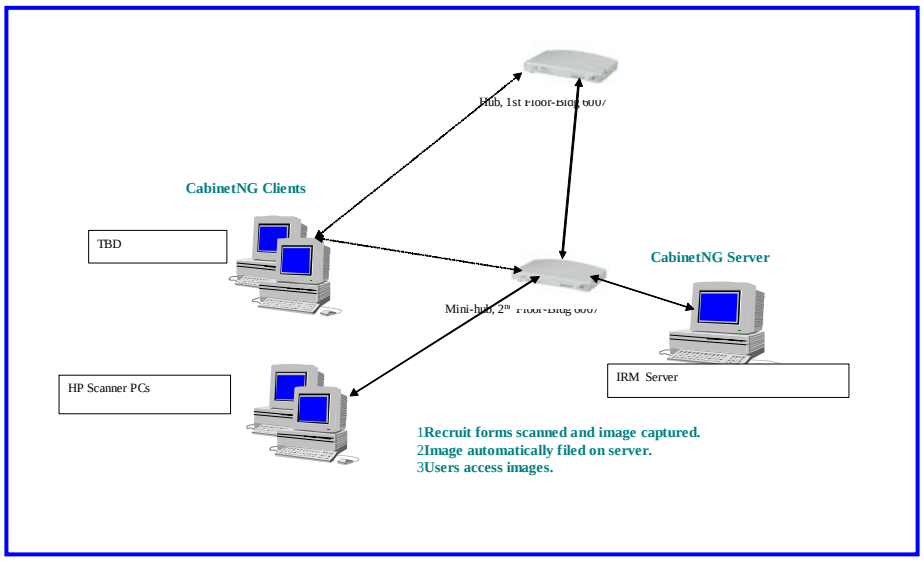


Figure 11 – Scan Form Creation and Electronic Filing

5.2 Scope of the Project

This particular section of the project was a relatively simple process. AdvanTech improved the filing of forms and tracking of forms by modifying several tables in the Control Panel and storing the images in a separate location on the server. CabinetNG installation and modification schedule was as outlined in the following table.

Month/Year	Function
July 2003	CabinetNG software installed.
November 2003	Installed the interface software between the IRM Control Panel and the CabinetNG program (developed by CabinetNG).
March 2003	Modification to Control Panel's Recruits database made to capture scanned image name and location. This modification was required for the interface.

Table 3 – CabinetNG Installation and Modification Schedule

5.3 Electronic File Management Objectives

The objectives of the Electronic File Management included:

- Providing users with an automatic filing mechanism of all scanned forms; and,
- Provide an efficient retrieval process of all recruits' issue forms.

6.0 Program Integration Technical Approach

Several systems comprise the Integrated Retail Module (IRM) single solution. This has eliminated re-keying of data and the necessity of cumbersome nightly batch processes to update the Ft. Jackson's materials management system (VIM/WL).

The approach for this project is described in the following paragraphs (subparagraph numbers below are from the project proposal).

6.1 Site Survey

6.1.1 Ft. Jackson Site Survey for Scan Forms and Expanded RF

This task addresses the requirement to perform an on site assessment to determine any cabling requirements and to verify scan form requirements. An RF site survey was performed for Ft. Jackson in 2001. This survey will be used as the baseline for Ft. Jackson's expanded RF network with inclusion of the Scan Form computers.

6.1.2 Ft. Benning Site Survey for RF Network

This task addresses the requirement to perform a complete RF survey in order to determine the best placement of Network Access Points, installation requirements, and cabling requirements. This is necessary to ensure that maximum coverage is provided within all areas where stock is stored, received, and/or issued.

6.1.3 Ft. Sill Site Survey for RF Network

This task addresses the requirement to perform a complete RF survey in order to determine the best placement of Network Access Points, installation requirements, and cabling requirements. This is necessary to ensure that maximum coverage is provided within all areas where stock is stored, received, and/or issued.

6.1.4 Ft. Knox Site Survey for RF Network

This task addresses the requirement to perform a complete RF survey in order to determine the best placement of Network Access Points, installation requirements, and cabling requirements. This is necessary to ensure that

maximum coverage is provided within all areas where stock is stored, received, and/or issued.

6.1.5 Ft. Leonard Wood Site Survey for RF Network

This task addresses the requirement to perform a complete RF survey in order to determine the best placement of Network Access Points, installation requirements, and cabling requirements. This is necessary to ensure that maximum coverage is provided within all areas where stock is stored, received, and/or issued.

6.1.6 MCRD-SD Site Survey for RF Network

This task addresses the requirement to perform a complete RF survey in order to determine the best placement of Network Access Points, installation requirements, and cabling requirements. This is necessary to ensure that maximum coverage is provided within all areas where stock is stored, received, and/or issued.

6.2 Install ARNLAN at Ft. Jackson

A limited RF Network was installed at Ft. Jackson in January 2002. This RF network covers the receiving area of the main building but does not complete cover all issue/storage areas.

6.2.1 Expand RF Network at Ft. Jackson

The installation of the ARNLAN will be accomplished during the implementation of the new applications/functionality. This task includes the coordination with the site for approval to install a RF network, installation of the high-speed scanners and networking the AutoData Scan Forms computers to the ARNLAN, installation of the RF network, installation of the Common Access Card Readers and programs, installation of the electronic file management system, and the incorporation of Symbol Wireless Network cards where necessary to capture the recruit's Common Access Card identification data.

6.3 AutoData Scan Forms Implementation

6.3.1 Coordinate ACIIPS Interface Requirements with TRADOC

The automated process of capturing recruit issues will require coordination with TRADOC for the creation of new forms, interface requirements to ACIIPS, and storage/retrieval requirements within the electronic file management application.

6.3.2 Develop Army Issue Forms

Once TRADOC requirements for issue forms have been determined, AdvanTech will create the Army/site (Ft. Jackson) specific forms as necessary.

6.3.3 Forms Data Mapping

Once the forms have been created the data elements on the forms will be mapped to the corresponding database and fields.

6.3.4 Forms Programming into user tables and Script Development

This task incorporates the development/modification of the scripts to send data to VIM-QLM/Central.

6.3.5 Forms Testing

Once forms are mapped and scripts have been developed a thorough testing of the forms will be conducted at AdvanTech.

6.3.6 Install and Test AutoData Software at Ft. Jackson

After successful completion of the test, AdvanTech will install the AutoData application at Ft. Jackson.

6.3.7 Integrate Scan Form Data into VIM Audit Reports

AdvanTech will validate that the VIM Audit Reports are updated appropriately with the Ft.. Jackson data.

6.3.8 Develop User Documentation and Provide Operator Training on Forms

This task allocates the time necessary to develop users manuals for the Army CIIP use of the AutoData Scan application and interface to ACIIPS.

6.3.9 Develop Recruit Database for Common Access Card Interface

This task allows for the creation of the specific data tables and associated routines used to populate the recruit master file.

6.3.10 Integrate Common Access Card Swipe for Night Room Issue

This task allows for the time associated with developing and testing the integration of recruit identification data into the recruit master table at the time of the Night Room Issue.

6.3.11 Testing CAC Integration and Develop Documentation

This task covers the testing of the card reader at Ft. Jackson and ensuring that data is appropriately updated in the Recruit Master table. This activity will occur at each Army CIIP site.

6.3.12 Implement Electronic Filing with Cabinet NG

This task incorporates the installation of the COTS electronic filing management software (CabinetNG) as well as the installation of the interface between the scan form application and CabinetNG. This solution will provide an electronic means of storing the recruit issue forms and will provide an easy retrieval mechanism for CIIP personnel if a recruit issue record is required.

6.3.13 Modify forms if required based on Site Survey

This task provides for sites specific modifications to Scan Forms based on sites needs. This includes Forms and Database mapping changes as necessary to accommodate variations in standard issue for National Guard and prior service recruits.

6.3.14 Coordinate with DSCP for High Speed Scanners and PCs for AutoData Application

This task accounts for the time associated with coordination for delivery of GFE hardware and software within the parameters of the implementation schedule.

6.3.15 Install Scan Forms Computers and Scanners

This is a consolidated task for hardware installation and installation support at all remaining Army sites.

6.4 Install RF Programs

6.4.1 Install RF Programs and Configure HHTs at Ft. Jackson

This task includes loading the 2 remaining RF application programs, installation of the new RF Network software, configuring the HHTs with the new RF programs, and ensuring that the HHTs communicate with the ARNLAN server and the Network Access Points.

6.5 Implement Satellite Communications at Ft. Jackson.

6.5.1 Site Coordination for Installation

This task allows for the man-hours anticipated coordinating with site's facilities engineers and the satellite vendor for installation of the satellite dish and hardware.

6.5.2 Modification of AdvanTech Process to Pull Data

This task provides for the man-hours associated with changing the data communications from a site pushed (file transfer protocol) to a data pull via the VPN.

6.5.3 Testing of Communications Links

This task provides for the initial testing of the satellite and the initial transfer of data.

6.5.4 Satellite Implementation Travel

This task provides for the time associated with travel to Ft. Jackson for the satellite installation.

6.6 Post Implementation and Training

6.6.1 Training and Post Implementation Support to Ft. Jackson

This task covers the training on the use and troubleshooting of the AutoData Scan Forms application, high-speed scanner, RF applications, Symbol HHTs, and the wireless Network Access Points. This task also covers additional post implementation support to provided additional telephonic training support, monitoring of receipt and issue transactions to ensure expected outcomes are attained, and troubleshooting of network activity as necessary.

6.6.2 ARNLAN Network/System Administration Support

With the expanded RF Network and the installation of the Satellite communications and Cisco Router, the ARN network requires a skilled administrator. This task incorporates the daily/weekly monitoring and management of user accounts, drive mapping, disk space and cleanup, as well as the more complex troubleshooting requirements of an advanced network.

6.6.3 Systems Modifications Changes and Testing

This task incorporates the work associated with changing issue forms or RF applications as required by the site and approved by the Program Manager.

6.6.4 Post Implementation Training and Trip Reports

A report will be created after each trip which summarizes the major events that occurred and the accomplishments.

6.7 Project Management

6.7.1 Project Tracking

This task includes the daily and weekly coordination and monitoring of the deliverables, milestones and resources assigned to this STP.

6.7.2 Project Review and Follow-up

This task includes impromptu meetings, briefings and Q&A sessions with the DSCP and other parties associated with this STP.

6.8 Monthly Reports and Meetings

6.8.1 Interim Progress Report

Provide Interim Progress Reports (IPRs) to the Project Manager and the ARN participants as directed.

6.8.2 Contract Funds Status Report

Provide regular Contract Funds Status Reports (CSFRs) to the Project Manager on the Status of Funds expended.

6.8.3 Meetings

Provides support for meetings for ARN team members and related project personnel for tasks other than training and project management coordination.

7.0 Highlights of Implementation and Support

Several trips were made as the Integrated Retail Module was incrementally implemented. The network setup was more involved than originally anticipated. Router setup and communication through the satellite was difficult and required several more days than allocated. Once these network problems were resolved and the firewall and router were configured the remaining project was accomplished by incrementally installing applications.

The initial network setup, RF application installation and conversion from QLM/Local to VIM/WL occurred in June-August 2003. The Control Panel with the interfaces to the Army provided recruit identification data files and CabinetNG were installed in November 2003.

The VIM/WL application and improved RF receiving program was well received by Ft. Jackson CIIP personnel. Initially there was considerable trepidation regarding the use and accuracy of the IRM Control Panel. Enhancements to speed certain processes led to the complete turn-off of ACIIPS and total use of the IRM Control Panel. Prior to IRM there were up to 4 personnel supporting the ACIIPS system and 2 supporting the QLM/Local system. Now there are 3.5 personnel supporting all IRM functions.

7.1 Lessons Learned During Implementation

As with any new system, there were numerous difficulties and issues encountered that had to be resolved as efforts progressed. The following items highlight the key lessons learned:

7.1.1 Buy-In by Site Personnel Requires Local Champion(s)

The CIIP manager, QLM/Local clerk and the temporary QLM/Local clerk were vary supportive with the conversion from QLM/Local to VIM/WL. They were also instrumental in eventually winning over the ACIIPS clerks to support and use the IRM Control Panel. Converting the ACIIPS functions to the IRM Control Panel created a high level of anxiety for the ACIIPS clerks, but with the leadership and direction of the CIIP manager and QLM/Local clerk new processes were utilized and all new applications and functions were used.

7.1.2 Location Systems

A critical success factor for the inventory control is a good location system that is outlined and loaded into the VIM/WL Supplemental Bin Locations module. If no location system is in place, support and guidance should be provided for the development of a system.

7.1.3 RF Physical Inventory and RF Stock Movement Processes

Bar-coded locations in the bulk warehouse are necessary in order to effectively use the RF Physical Inventory program and the RF Stock Movement program.

7.1.4 Satellite Communications

Satellite technology used to access the Internet was determined to be very slow. This solution using satellite technoilogy was determined to be better than dependency on a dial-up connection through a modem; however, either DSL or Digital Cable or ISDN support is desirable to provide for routine data communication needs.

8.0 RESULTS ACHIEVED & METRICS

This section provides summary information on the results that were achieved at Ft. Jackson. It is important to note that the support has not ended with the completion of this project and that refinements continue to be made to fine-tune operational support and efficiency of the supply chain activities.

8.1 Operational Objectives & Results

The expected benefits were:

(1) Provide a near real-time inventory management system;

(2) Implement an web-based inventory management system to provide visibility of supply activity to DSCP;

(3) Provide a system that tracks more accurate inventory levels;

(4) Replace the current ACIIPS system; and,

(5) Provide faster, more efficient capture of issue data and receiving data.

The Integrated Retail Module is expected to provide DSCP Item Managers with better production requirement data, and wholesale-local inventory requirement predictions allowing for just-in-time inventory methodologies without compromising supply support to the recruit issue process.

There were several objectives defined at the start of the project. The desired results from the implementation of the Integrated Retail Module included the following:

- **Asset Visibility –**
  Both Ft. Jackson and DSCP have a clear and near real-time picture of the stock position at Ft. Jackson.

- **Decreased Order Ship Time (OST) –**
  Through the RF receiving module, receipts are closed much more quickly and the Inventory Too Low Adjustments have been decreased. This leads to higher inventory accuracy rates.

- **Improve Inventory Accuracies and Efficiencies –**
  The new HHT inventory module means less duplication of effort and virtually no re-keying of data by a clerk after counts are completed. As for increased

accuracy rates, monitoring the inventory practices and procedures that are now visible through VIMWL will lead to greater accuracy rates. More time is needed to determine what practices at Ft. Jackson require modification in order to increase accuracy levels.

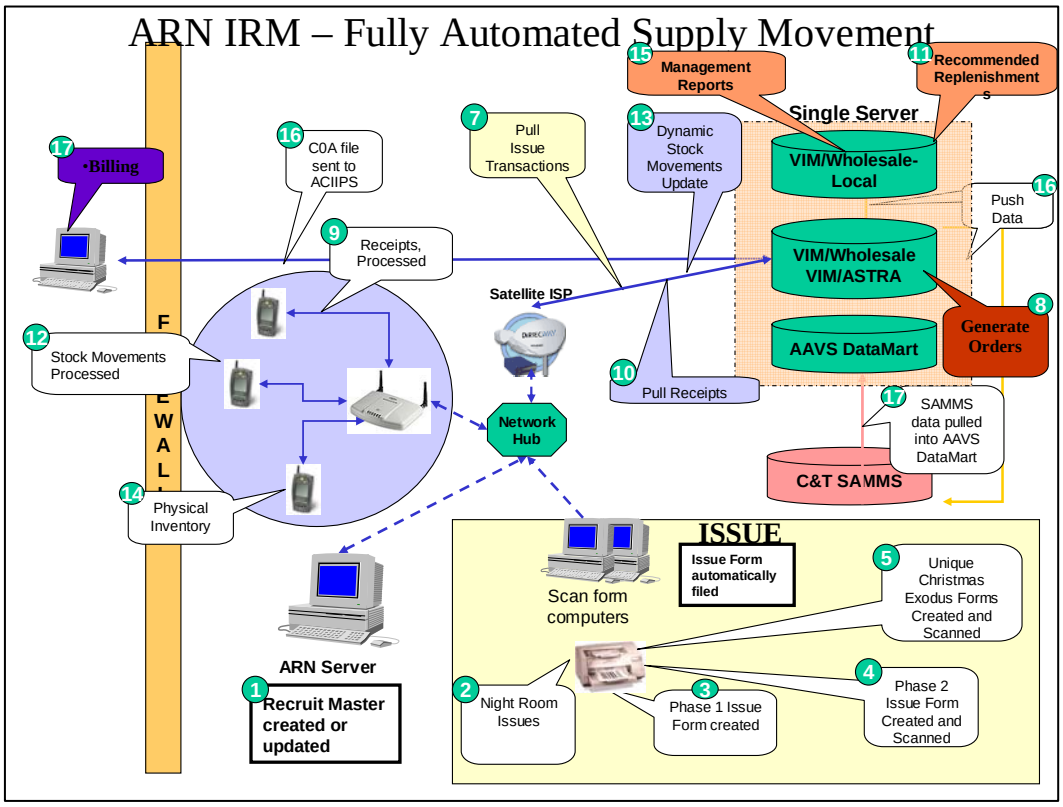
8.2 Ft. Jackson CIIP, IRM Objectives

This project has successfully met the stated objectives for improved systems for Ft. Jackson users:

- The ACIIPS with the IRM Control Panel.
- The web-based inventory management system, VIMWL, has replaced the client server inventory system QLM™.
- Receipts are processed with the RF HHT application in a very timely manner.
- The Smart Card reader application was not a viable solution but the interface to 2 different Army databases has provided an incredibly easy and very accurate mechanism to capture the recruits' identification data, and has provided an efficient mechanism to build the IRM Control Panel recruit master records.
- An electronic filing/document management system was provided that automatically filed the recruit scan forms. This tool has been widely embraced and has effectively reduced the stacks and boxes of recruit issue forms that Ft. Jackson was required to maintain.
- DSCP has a detailed view of all supply transactions occurring at Ft. Jackson.

8.3 Ft. Jackson IRM Data Flow

The following figure illustrates the data flow, as it exists now following the successful completion of this ARNII short-term project.


ARN IRM – Fully Automated Supply Movement
Management Reports
Recommended Replenishments
Single Server
VIM/Wholesale-Local
VIM/Wholesale VIM/ASTRA
AAVS DataMart
C&T SAMMS
Generate Orders
Push Data
Pull Issue Transactions
Dynamic Stock Movements Update
Pull Receipts
SAMMS data pulled into AAVS DataMart
C0A file sent to ACIIPS
Receipts, Processed
•Billing
Stock Movements Processed
Physical Inventory
Satellite ISP
Network Hub
FIREWALL
ARN Server
Recruit Master created or updated
ISSUE
Scan form computers
Issue Form automatically filed
Unique Christmas Exodus Forms Created and Scanned
Night Room Issues
Phase 1 Issue Form created
Phase 2 Issue Form Created and Scanned

APPENDICES

Appendix A – Definition of Terms & Acronyms

Appendix B – Project Personnel

Appendix C – newrecruits.xls Format

Appendix D – RECBAS clofile.dat Format

Appendix E – DSCP/DFAS MOA

Appendix F – Database Diagram

Note: Additional references and ARN Supply Chain Management Technical Reports are available from the ARNII website at http://arn2.com/.

Appendix A – Definition of Terms & Acronyms

The following acronyms are used in this report and are provided to facilitate clarity of understanding for the reader.

- **ARN** – Apparel Research Network made up of selected industry and academic partners working together to develop innovative solutions for the Apparel industries support of military departments.
- **ASTRA -** ARN Supply-chain Transaction Repository Audit.
- **C&T** – Clothing and Textiles Division of the Defense Supply Center Philadelphia.
- **C0A** – Post post issue transaction
- **DFAS** – Defense Finance and Accounting Service
- **DOS** – Day Of Supply.
- **DSCP – Defense Supply Center Philadelphia -** DSCP controls the procurement and distribution of Medical, Subsistence (i.e., food), and Clothing and Textiles commodities to Defense Logistics Agency (DLA) depots and stock record accounts, worldwide.
- **HHT --** Handheld Terminal
- **MCRD-PI** – Marine Corps Recruit Depot – Parris Island
- **MILSTRIP** – Military Standard Replenishment System
- **NSN** – National Stock Number
- **ODS** – DFAS system that processes the T23 file
- **OL** – Operating Level
- **OST** – Order Ship Time
- **QDR** – Quality Deficiency Report. These are used to track items that are outside acceptable standards for issue to recruits. These reports provide

for communication with DSCP Item Managers regarding problems of quality that are encountered.

- **QLM** – Quality Logistics Management™ – Material Management inventory system supporting acquisition, issues and distribution and predictive forecasting.

- **QLM/Local** – The QLM software implemented as a "wholesale local" inventory management system supporting acquisition, distribution and predictive forecasting at Ft. Leonard Wood as a prototype for future sites. The system provides a "local" capability to manage wholesale inventory assets located at the CIIP including receipt and inventory adjustment processing.

- **RIC** – Routing Identifier Code – Refers to a code used in SAMMS for identification of location where materials are to be shipped.

- **RTC** – Recruit Training Center (includes Army CIIPs) – These are the facilities operated by the different departments of the military where new recruits are inducted for basic training.

- **SAMMS** – Standard Accounting and Material Management System - This system is used by the Defense Logistics Agency, Defense Procurement Support Center.

- **SSN** – Social Security Number

- **T23** – Army's financial obligation file

- **VB –** Visual Basic

- **VIM –** The Virtual Item Manager (VIM) system incorporates operational data extracted from the SAMMS Clothing & Textile (C&T) server as the basis for the operational and decision support capabilities provided in a single source of information for Item Managers at the retail (Recruit Training Centers) and wholesale (DSCP) level.

- **VIM/WL –** VIM Wholesale Local

Appendix B – Project Personnel

The following personnel were involved in various phases or tasks for this project. Each of these individuals played key roles and worked closely together in achieving the desired results from the new systems developed and implemented for Ft. Jackson CIIP.

Individual	**Position/Responsibility, Organization**
Robert E. Bona	Vice President, Operations, AdvanTech, Inc.
Douglas D. DeLoach	Senior Trainer, AdvanTech and Subject Matter Expert
Sally DiDonato	Branch Manager, Clothing & Textiles, DSCP
Carol E. Fraser	Director of Technical Services & Project Manager, AdvanTech, Inc.
Bernie Johns	Deputy Program Manager to ARN Program Manager
John McAndrews	Item Manager & Supervisor, DSCP
Kathleen Moore	Deputy Program Manager to ARN Program Manager
Richard A. Perrin	Principal Investigator, President, AdvanTech, Inc.
Michal Safar	Deputy Program Manager to ARN Program Manager
Julie Tsao	ARN Program Manager (Contracting Officer's Technical Representative), Defense Logistics Agency
Debra L. Wassel	Technical Support Specialist, AdvanTech, Inc.

Appendix C – newrecruits.xls Format

RECSTA_LOC	SSN	NAME	SEX	RECSTA_DT	SHIPDATE	MOS	COMPONENT

RECSTA_LOC: 4 position alpha character of the RTC name, i.e. BENN = Ft. Benning

SSN: 9 position numeric field containing the soldier's social security number

NAME: maximum 26 position alpha field containing the soldier's last name, space, first name, space, middle name

SEX: 1 position alpha field indicating the soldier's gender, i.e. F or M

RECSTA_DT: 8 position numeric field indicating the soldier's estimated arrival date to the RTC

SHIPDATE: 8 position numeric field indicating the soldier's estimated departure date from the MEPS station (The SHIPDATE is converted to a Julian Day preceded by the letter N, i.e. N357. This N357 is then used as the initial platoon number designator in the recruit master record for all soldiers shipping out on December 23rd.)

MOS: 4 position alphanumeric field indicating the soldier's military occupation specialty

COMPONENT: 2 position alpha field indicating the soldier's component or status, i.e. AA = Active Army, NG = National Guard, AR = Army Reserve

Appendix D – RECBAS clofile.dat Format

The following is the format provided by the Receiving Battalion used to build the Recruit Master File in the Control Panel.

Site Code – Header Record
487 C

R#	Name	SC	C	SSN	Gr	Com
241	JEFFERSON SHAWNTA MARIE		R	123456789	E1A	21
269	WARNSHOLZ JUNE DENALI	ND	G	456789012	E1A	21

R#: 3 position alpha field containing the Receiving Battalion Roster Number

Name: Maximum 26 position alphanumeric field containing the soldier's last name, space, first name, space, middle name

SC: 2 position alpha field containing the State Code abbreviation for each National Guard soldier

C: 1 position alpha field designating the soldier's component, i.e. A = Active, R = Reserve and G = National Guard

SSN: 9 position numeric field containing the soldier's social security number

Gr: 2 position alphanumeric field containing the soldier's Grade designation

Com: 1 position alpha field containing the soldier's Receiving BN Company designator

Appendix E – DSCP/DFAS MOA

Note: This Appendix provides a copy of the Memorandum of Understanding detailing the document interfaces and data transfers between the Integrated Retail Module (IRM) and the Operational Data Store (ODS) for the US Department of the Army. Specifically, the organizations directly involved in the management, operations and maintenance of these systems are Defense Logistics Agency and DFAS-IN.

SYSTEM INTERFACE
MEMORANDUM OF AGREEMENT

BETWEEN THE

INTEGRATED RETAIL MODULE (IRM)

AND THE

OPERATIONAL DATA STORE (ODS)

Signature:_____Date:_____
IRM Program Manager

Signature:_____Date:_____
ODS Program Manager

1. Scope

This document specifies interface data transferred between the INTEGRATED RETAIL MODULE (IRM) and the Operational Data Store (ODS). The organizations directly involved in the management, operations and maintenance of these systems are Defense Logistics Agency and DFAS-IN.

2. Objective

The purpose of this agreement is to document the data interface requirements between the IRM and ODS. This agreement specifies which interface files and/or tables will be transferred between each of the identified systems, the frequency and period that each will be transferred, and the technical methodology that will be used to perform the transfer.

This memorandum establishes clear interface requirements and organizational responsibilities to ensure accurate and timely data transfer between the identified systems. Adherence to this agreement will help to ensure proper transaction processing between the systems.

3. Responsibility

It is the responsibility of HQ DLA to ensure the transfer of data from IRM to ODS is accomplished as specified in this memorandum.

It is the responsibility of DFAS-IN to ensure the transfer of data from ODS to the appropriate accounting system (i.e. STANFINS) is accomplished as specified in this memorandum.

4. Interfaces Defined

ACIIPS Obligation File (TA 23s)
IRM has agreed to retain the same name as used by ACIIPS. The following will be used as the file name for the obligation file produced by IRM:

ID	Description
ACIIPSFSNSITEID.YYYYMMDD	"TA 23" obligations will be sent via IRM to ODS for routing to the appropriate accounting system (i.e. STANFINS).

The 'ACIIPS' part of the filename will be a constant. The 'FSNSITEID' may vary depending on the sending installation. It will then be followed by YYYYMMDD used for the date stamp of the file transfer to ODS. The format for the obligation input file listed above is contained in Attachment 1.

The DODAAC off the obligation and disbursement file will be bumped against the ODS DODAAC table to determine the FSN. ODS will then locate that FSN in its Ed FSN table to route the transaction to the appropriate accounting system (i.e. STANFINS). If the DODAAC

is not in the ODS DODAAC table, the transaction will be routed to the FSN and Site Id in the filename.

5. Transfer Frequency and Period

ACIIPS Obligation File (TA 23s)
The frequency of the following filename will be submitted as follows:

ID	Frequency
ACIIPSFSNSITEID.YYYYMMDD	Daily

Multiple files will be created during a normal workday. If the file creation schedule changes to something other than what is listed, IRM must notify the ODS point of contact (POC).

All files loaded in the ODS ATG_D and ATG_SUP_D tables before 1:00 pm am will be included on that day's obligation bridge file to the appropriate accounting system (i.e. STANFINS). All files loaded in the ODS ATG_D and ATG_SUP_D tables on or after 1:00 pm will be included on the next day's obligation bridge file to the appropriate accounting system (i.e. STANFINS). The format for the bridge file is contained in Attachment 2.

6. Technical Methodology

The Regional Support Activity (RSA) at Rock Island (RI) will assign one "non-expiring" password per installation for File Transfer Protocol (FTP). This security account will allow access to a specific directory on the UNIX file server. Each submitter will have their own account and will not be able to view data on the file server other than their own. Although only one "non-expiring" password per installation will be given out, multiple userids and passwords can be requested to analyze the data residing in ODS.

The Host Address for FTP to ODS is 160.137.64.100. The userid and password for this transfer will be coordinated with RSA RI.

It is imperative that any modifications (structural vs. data) to the IRM files as listed in paragraph 4 be coordinated with ODS personnel 30 days in advance (if not earlier) so the change can be implemented into the ODS database. This stipulation is for changes involving the database. Any changes involving stored procedures or other programming alterations that will affect ODS must be addressed through Configuration Management and the System Change Request (SCR) processes.

7. Header Records

The IRM to ODS files will be preceded by a standard header record. Prior to loading the files in ODS, an edit will ensure that the Record Count and Total Dollar Amount from the Header Record matches the detail. If there is not a match, then the file will NOT be loaded. A POC for that FSN, from the filename, will be notified. The layout of the header record is shown in Attachment 3.

8. Interface Schedules

8.1 *Testing*

Initial ODS test file, in accordance with attached formats, is to be provided to ODS functional or technical personnel by target date December 2003. This test file should be a file created as it would through the production environment.

8.2 *Production*

The automated production process, which will provide input data to the ODS and supply the interface files specified in this agreement, has target implementation date of December 2003.

9. Points of Contact

DFAS-ODS-IN	Joyce Smith 317-510-3548 DSN 699-3548 joyce.smith@dfas.mil
DFAS-ODS-IN	Annamaria Crider 317-510-5707 DSN 699-5707 annamaria.crider@dfas.mil
DSCP (DLA Representative)	Gerald Iuliucci 215-737-9078 Gerald.Iuliucci@dla.mil
Contractor (IRM)	Carol E. Fraser 410-266-8000 cefraser@advantech-inc.com

ATTACHMENT 1

OBLIGATION (TA 23) INPUT FILE

	DATABASE			INPUT FILE			
Field	Table Name	Attribute Name	Attribute Type	Field Name	Sample	Field Length	Justify
1-2	ATG_D	TAC_TYP	CHARACTER	Type Action	“23” or “20”	2	L
3	BLANK	BLANK	BLANK	Blank	“ “	1	L
4-6	ATG_SUP	NO_BLK	VARCHAR2	Document Indicator Code	“Y17”	3	L
7-9	BLANK	BLANK	BLANK	Blank	“ “	3	L
10	ATG_D	FY	VARCHAR2	Fiscal Year	“9”	1	L
11-19	BLANK	BLANK	BLANK	Blank	“ “	9	L
20-26	ATG_SUP_D	MD_PAT	VARCHAR2	Manday Parts	“0000000”	7	L
27-30	BLANK	BLANK	BLANK	Blank	“ “	4	L
31-34	ATG_D	EOR	VARCHAR2	Element of Resource	“26GA”	4	L
35	BLANK	BLANK	BLANK	Blank	“ “	1	L
36-40	BLANK	BLANK	BLANK	Blank	“ “	5	L
41-44	ATG_D	APC	VARCHAR2	Accounting Processing Code	“ “	4	L
45-48	BLANK	BLANK	BLANK	Blank	“ “	4	L
49	ATG_SUP_D	ODC	VARCHAR2	Obligation Data Code	“1” or “2”	1	L
50-63	ATG_D	DRN	VARCHAR2	Document Reference Number	“MIPR8HWSMD0729”	14	L
64-69	BLANK	BLANK	BLANK	Blank	“ “	6	L
70	ATG_SUP_G	PART_FIN_IDC	VARCHAR2	Final Indicator Code	“A”	1	L
71-80	ATG_D	AMT_ATG	NUMBER	Amount	“000002328}”	10	R
81-82	BLANK	BLANK	BLANK	Blank	“ “	2	L
83-95	ATG_SUP_D	NSN	VARCHAR2	Federal Stock Number	“1055011278293 “	13	L
96-105	ATG_D	DTE_TAC_POST	VARCHAR2	Business Date	“MM/DD/YYYY”	10	L
106-111	ATG_D	1st six of DRN	VARCHAR2	DODAAC	“WK4GAA”	6	L
112-122	ATG_SUP_D	NO_CUS_ID	VARCHAR2	SSN	“123-45-6789”	11	L
123-126	ATG_SUP_D	CUS_ID_ADR	VARCHAR2	Last Name	“RAWL”	4	L

127-129	ATG_SUP_D	QTY	NUMBER	Quantity	"00001"	3	R, zero-fill
130-137	ATG_SUP_D	UNIT_PRICE	NUMBER	Unit Price	"00000055"	8	R Zero-fill
138-139	ATG_SUP_D	UI	VARCHAR2	Unit of Issue	"EA" or "PR"	2	L
140	ATG_SUP_D	CD_EQUIP	CHARACTER	Equipment Code	"I" or "O"	1	L

LOGIC TO ROUTE OBLIGATIONS TO STANFINS:

NOTE 1: Quantity should be 3 characters in length (pos. 127-129), zero-filled, with no decimal.

NOTE 2: Unit Price should be zero-filled, assumed decimal of 2 positions

NOTE 3: Match the 1st six positions of DRN (pos. 50-55) from Obligation Input file against the Activity Address field (pos. 8-13) on the DODAAC table in ODS to determine the FSN.

NOTE 4: Locate the FSN (pos 31-35) from Note 1 (above) in the Ed FSN table to obtain the SITE ID and route the obligation to the appropriate accounting system (i.e. STANFINS) on the bridge file.

NOTE 5: Although position 81-140 will be populated on the incoming obligation file from IRM, the data can only be written to the ODS database. It can NOT be added to the outgoing bridge file for the accounting system. This information is for query purpose only.

ATTACHMENT 2

TA 23 TO BE INCLUDED ON THE BRIDGE FILE

	DATABASE			OUTPUT FILE				
Field	**Table**	**Attribute Name**	**Attribute Type**	**Field Name**	**Field Position**	**Field Len**	**Justify**	**Format**
1	ATG_D	TAC_TYP	VARCHAR2(2)	Type Action	1-2	2	L	
2				BLANK		1	L	
3	ATG_SUP_D	NO_BLK	VARCHAR2(3)	Block Number	4-6	3	L	
4				BLANK		3	L	
5	ATG_D	FY	VARCHAR2(4)	Fiscal Year	10-10	1	L	
6	ATG_D	APC	VARCHAR2(6)	APC Do	11-14	4	L	
7	ATG_SUP_D	NO_BLL_DTE_SSP	VARCHAR2(5)	Bill Date/Suspense No.	15-19	5	L	
8	ATG_SUP_D	MD_PAT	VARCHAR2(7)	Mandays Parts	20-26	7	L	
9				BLANK	27-30	4	L	
10	ATG_D	EOR	VARCHAR2(6)	Element of Resource	31-34	4	L	
11				BLANK	35-35	1	L	
12	ATG_SUP_D	QTY	NUMBER(10,2)	Quantity	36-40	5	R	9(5)
13	ATG_D	APC	VARCHAR2(6)	APC	41-44	4	L	
14	ATG_SUP_D	CRY_WRL	VARCHAR2(2)	Country World	45-46	2	L	
15	ATG_SUP_D	CD_IBP_SP_D	VARCHAR2(1)	IBP Specific Data	47-47	1	L	
16	ATG_SUP_D	CD_IBP_SUP	VARCHAR2(1)	IBP Supplemental Code	48-48	1	L	
17	ATG_SUP_D	ODC	VARCHAR2(1)	Obligation Data Code	49-49	1	L	
18	ATG_D	NO_DOC_REF	VARCHAR2(22)	DRN	50-63	14	L	
19	ATG_D	DOV	VARCHAR2(8)	DOV	64-69	6	L	
20	ATG_SUP_D	PART_FIN_IDC	VARCHAR2(1)	LIQ Indicator	70-70	1	L	
21	ATG_D	AMT_ATG	NUMBER(16,2)	Amount	71-80	10	R	S9(8)V99
	BLOCK TOTAL RECORDS			**BLOCK TOTAL RECORDS**				
1	ATG_D	TAC_TYP	VARCHAR2(2)	Type Action	1-2	2	L	
2				BLANK	3-3	2	L	
3	ATG_SUP_D	NO_BLK	VARCHAR2(3)	Block Number	4-6	3	L	

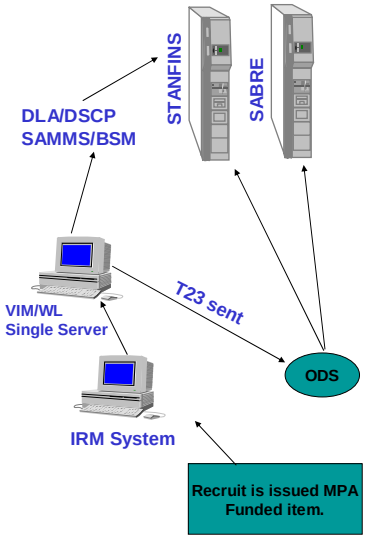
4				Constant	7-7	1	L	“T”
5				System Julian Date	8-11	4	L	YDDD
6	ATG_D	AMT_ATG	NUMBER(16,2)	Amount	12-22	11	R	S9(9)V99

ATTACHMENT 3

HEADER RECORD FOR TA 23s

INPUT FILE FIELD	FIELD NAME	FIELD POSITION	FIELD LENGTH	JUST	FORMAT	SAMPLE
	HEADER RECORD					
1	Record Type	1	1-1	L	Default :0:	H
2	Date file was created	8	2-9		YYYYMMDD	20030124
3	Source System Name	6	10-15			ACIIPS
4	Record Count	6	16-21			000231
5	Total dollar amount	10	22-31	R	S9(8)V99	000006290{

IRM Process Flow for MPA or OMA Funded Items



1. Soldier is issued an MPA funded item, issue form is scanned into the IRM Control Panel. The Control Panel creates the appropriate MILSTRIP transactions and a T23 holding file.

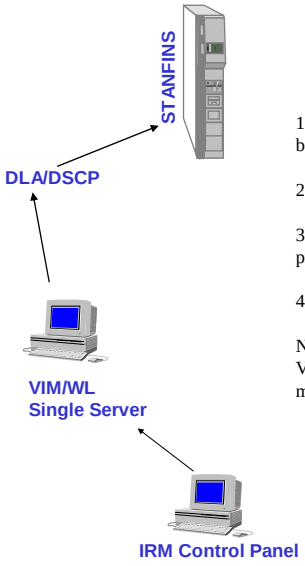
2. IRM passes the A0A and the T23 holding file to the ARN Single Server. A0A data is sent to DLA/DSCP SAMMS or BSM. T23 is formatted for each site and ftp'd to ODS to establish obligations.

3. DSCP passes a bill to appropriate financial system.

4. ODS forwards obligations to appropriate financial system.

5. Financial system matches bill to obligation for payment.

Redistribution of Assets from DSCP/DLA to VIM/WL



1. IRM submits A0A to VIM/WL. VIM/WL decrements on-hand balances and submits A0A to DLA for redistribution of assets.

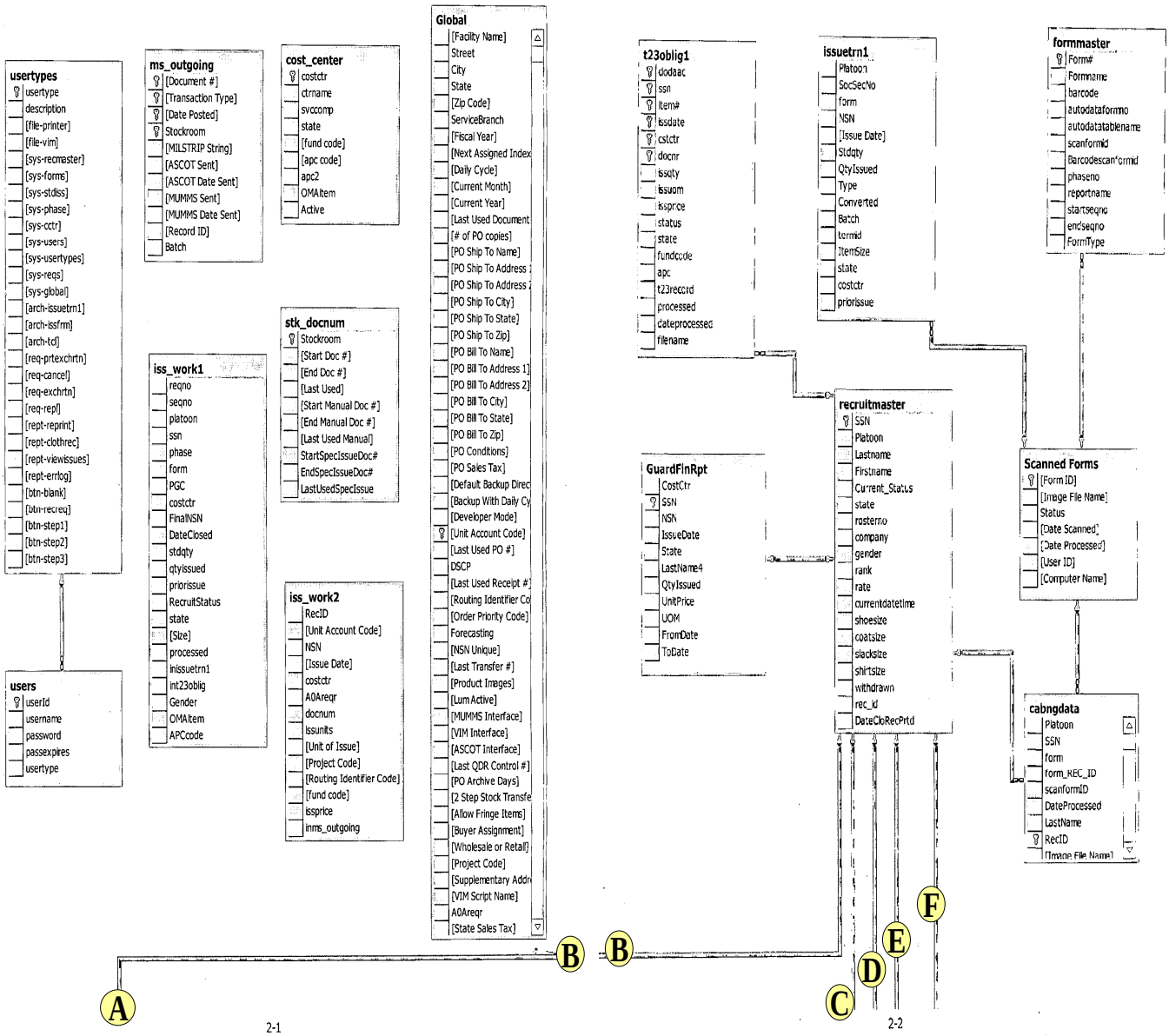
2. DSCP/DLA directs redistribution with an A2A.

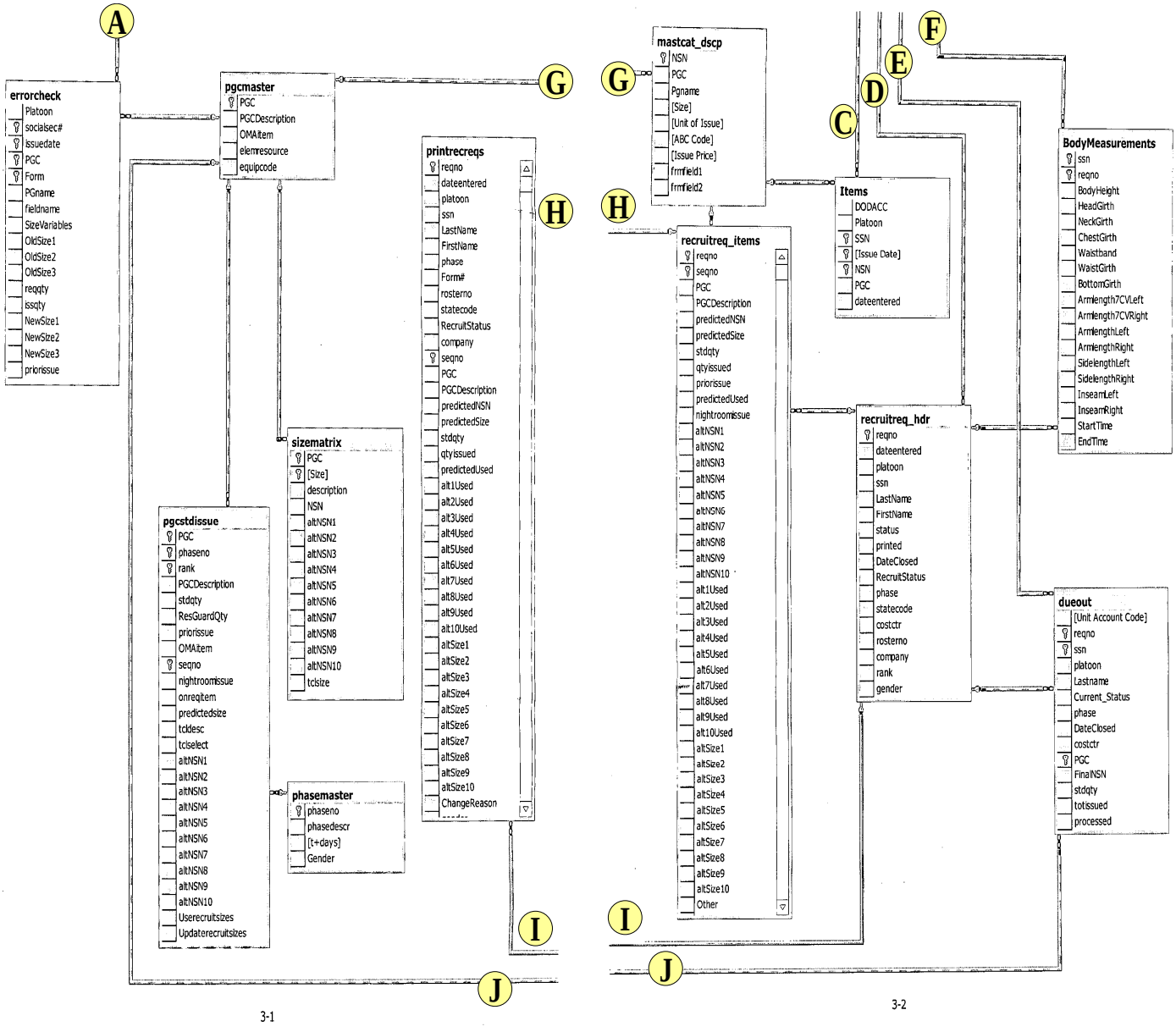
3. Material is received into the VIM/WL system and a D6K receipt is processed to DSCP.

4. Inter Depot Transfer - NO BILL

NOTE: Receipts, adjustments and inventory management become a VIM/WL responsibility. (VIM/WL is a web-based materials management system that replaced QLM.)

Appendix E – Database Diagram




A
errorcheck
Platoon
socialsec#
issuedate
PGC
Form
PGname
fieldname
SizeVariables
OldSize1
OldSize2
OldSize3
reqqty
issqty
NewSize1
NewSize2
NewSize3
priorissue
pgcmaster
PGC
PGCDescription
OMAitem
elemresource
equipcode
G
printrecreqs
reqno
dateentered
platoon
ssn
LastName
FirstName
phase
Form#
rosterno
statecode
RecruitStatus
company
seqno
PGC
PGCDescription
predictedNSN
predictedSize
stdqty
qtyissued
predictedUsed
alt1Used
alt2Used
alt3Used
alt4Used
alt5Used
alt6Used
alt7Used
alt8Used
alt9Used
alt10Used
altSize1
altSize2
altSize3
altSize4
altSize5
altSize6
altSize7
altSize8
altSize9
altSize10
ChangeReason
H
sizematrix
PGC
[Size]
description
NSN
altNSN1
altNSN2
altNSN3
altNSN4
altNSN5
altNSN6
altNSN7
altNSN8
altNSN9
altNSN10
tclsize
pgcstdissue
PGC
phaseno
rank
PGCDescription
stdqty
ResGuardQty
priorissue
OMAitem
seqno
nightroomissue
onreqitem
predictedsize
tcldesc
tclselect
altNSN1
altNSN2
altNSN3
altNSN4
altNSN5
altNSN6
altNSN7
altNSN8
altNSN9
altNSN10
Userecruitsizes
Updaterecruitsizes
phasemaster
phaseno
phasedescr
[t+days]
Gender
I
J
3-1
G
mastcat_dscp
NSN
PGC
Pgname
[Size]
[Unit of Issue]
[ABC Code]
[Issue Price]
frmfield1
frmfield2
H
recruitreq_items
reqno
seqno
PGC
PGCDescription
predictedNSN
predictedSize
stdqty
qtyissued
priorissue
predictedUsed
nightroomissue
altNSN1
altNSN2
altNSN3
altNSN4
altNSN5
altNSN6
altNSN7
altNSN8
altNSN9
altNSN10
alt1Used
alt2Used
alt3Used
alt4Used
alt5Used
alt6Used
alt7Used
alt8Used
alt9Used
alt10Used
altSize1
altSize2
altSize3
altSize4
altSize5
altSize6
altSize7
altSize8
altSize9
altSize10
Other
I
J
C
D
E
F
Items
DODACC
Platoon
SSN
[Issue Date]
NSN
PGC
dateentered
recruitreq_hdr
reqno
dateentered
platoon
ssn
LastName
FirstName
status
printed
DateClosed
RecruitStatus
phase
statecode
costctr
rosterno
company
rank
gender
BodyMeasurements
ssn
reqno
BodyHeight
HeadGirth
NeckGirth
ChestGirth
Waistband
WaistGirth
BottomGirth
ArmlengthCVLeft
ArmlengthCVRight
ArmlengthLeft
ArmlengthRight
SidelengthLeft
SidelengthRight
InseamLeft
InseamRight
StartTime
EndTime
dueout
[Unit Account Code]
reqno
ssn
platoon
Lastname
Current_Status
phase
DateClosed
costctr
PGC
FinalNSN
stdqty
totissued
processed
3-2